Township of Lucan Biddulph
FIRE SERVICE MASTER PLAN

Final Report
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PREFACE

This document serves as the Township of Lucan Biddulph's Fire Services Master Plan. The primary motivation for developing this document is for the community in establishing a long-term strategy to protect life and property based on community risk, safety, corporate priorities, and council-approved budget allocations. This document will be used as a tool to evaluate and forecast the immediate and future emergency service needs of the community.

ACKNOWLEDGEMENTS

Behr would like to specifically acknowledge the leadership, diligence and continuous improvement focus of Fire Chief Ron De Brouwer (Lucan Station) and Fire Chief Steve Toews (Granton Station). While there are some challenges for the Township of Lucan Biddulph, both Chief De Brouwer and Chief Toews remain positive in their efforts to enhance the department and public safety for the community and its citizens. The two fire services' leadership and firefighters are dedicated and engaged in all facets of their community. Their pride in the department and their service is clear and evident.

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ACRONYMS

AHJ	Authority Having Jurisdiction
CAD	Computer Aided Dispatch
CRA	Community Risk Assessment
EMS	Emergency Medical Services
EOC	Emergency Operations Centre
ERF	Effective Response Force
FSMP	Fire Services Master Plan
FPPA	Fire Protection and Prevention Act
FUS	Fire Underwriters Survey
HIRA	Hazard Identification Risk Assessment
IAP	Incident Action Plan
KSA	Knowledge, Skills, and Abilities
LBFS	Lucan Biddulph Fire Services
MOU	Memorandum of Understanding
MPAC	Municipal Property Assessment Corporation
MVA	Motor Vehicle Accident
MVC	Motor Vehicle Collision
MVI	Motor Vehicle Incident
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
OFM	Office of the Fire Marshal
OBC	Ontario Building Code
OHS	Occupational Health and Safety
POC	Paid-On-Call (Volunteer Firefighter)
PSAP	Primary Service Answering Point
RMS	Record Management System
SCBA	Self Contained Breathing Apparatus
SOC	Standards of Cover
SOG	Standard Operating Guideline
VSA	Vitals Signs Absent

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Introduction

Today's fire and emergency services are continually being challenged by budget constraints, rising call volumes, and increasing and unusual risks against a backdrop of expectations to do more with less. The demand for emergency response and emergency management services has expanded, causing the role to shift and for services to diversify. Effective management of an emergency services department requires a clear understanding of risk and the ability to provide an appropriate response to mitigate the risks. Failing to realize and address these challenges could leave the community and its responders vulnerable.

Modern fire, rescue and emergency services have evolved into a critical component of a community's social safety net. Whereas early fire departments were established specifically to combat structure fires that, at the time, were often devastating. Today's fire departments are also called upon to respond to medical emergencies, rescues of all sorts, motor vehicle incidents, dangerous goods releases, wildland fires and natural disasters, etc. As a result, fire departments must be adequately resourced and equipped to provide these services safely, efficiently, effectively with a great deal of competency.

The goal of developing this Fire Service Master Plan is to provide strategic direction for the fire service. The plan will provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. This plan will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

While risks are the basis for triggering response decisions, our analysis has also investigated the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community, businesses, and overall public safety. Along with risks, this plan also, considers applicable legislation, industry-leading practices, and standards to provide unbiased analysis and evidence-based recommendations.

This project determines options towards an optimum service delivery model and serves as a blueprint for the municipality to be more effective and efficient in the delivery of emergency services through current and future challenges.

Strategic Goals

The Municipality of Lucan Biddulph and the Lucan Biddulph Fire Services (LBFS) will utilize the Community Risk Assessment (CRA) to identify the fire safety risks within their designated response area as the basis to inform the development of goals and objectives for the delivery of fire protection and emergency response provided. Optimizing the methodology of the three lines

of defense (Public Education, Fire Prevention and Code Enforcement, and Emergency Response) will allow LBFS to provide a comprehensive fire protection program.

Project Approach and Outcomes

While risks are the basis for triggering response decisions, our analysis has also investigated the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community, businesses, and overall public safety. Along with risks, this plan also, considers applicable legislation, industry-leading and best practices, and standards to provide unbiased analysis and evidence-based recommendations.

Key aspects in the development of this plan included a community and station tour that focused on the overall footprint, topography, and transportation infrastructure of the community along with the various response zones for each of the two responding stations. Touring each station also provided an opportunity to conduct a general condition and operational functionality assessment on each station.

Targeted interviews and an online survey were also used to collect data and information. This process was used to promote an open discussion about the community, risks, general concerns related to the community and municipal operations.

An industry peer municipal comparative analysis[1] of the fire service was conducted as a method of benchmarking the performance of departments to similar municipalities. These benchmarks include budgets, performance, effectiveness, and efficiencies. Although fire and emergency services ultimately have the same goal of protecting life and property, each community has its unique features in how to accomplish their goals. Our main criteria for the comparative analysis are indicators of effectiveness and efficiencies amongst the communities for risk and mitigation.

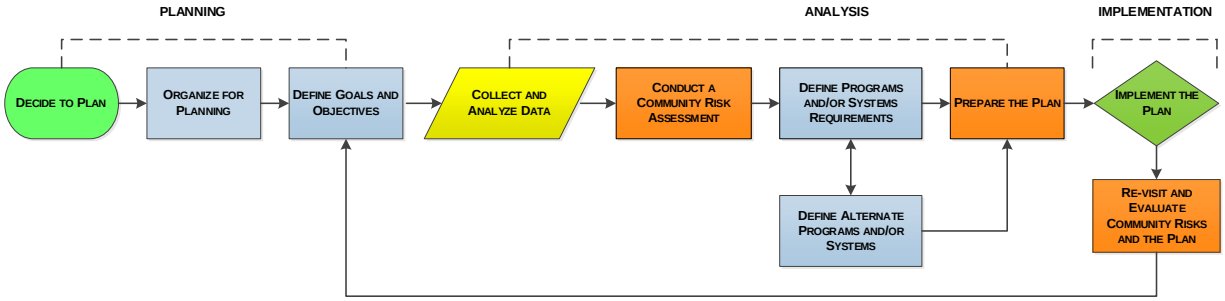
Fire Services Master Plan Process

The following diagram illustrates the process used to complete this plan. A Fire Service Master Plan is sometimes referred to as a 'road map' for the future and used as a guiding document for current and future department leaders and decision makers.

As described in the implementation phase, it is highly recommended that this plan be reviewed and evaluated, at minimum, on an annual basis or when there are unusual changes, such as in population, and residential and/or industrial development activity that could affect changes in risk. When reasonably possible, we also recommend a third-party update of the plan at the five-year mark to apply an unbiased review into the operation and provide further credibility to the master plan process.

[1] *Please see Section 3.15, Municipal Comparative Analysis, Page 83*

Fire Services Master Plan Process



Community Risk Assessment

Every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. In accordance with the Ontario Regulation 378/18: Community Risk Assessments (O. Reg. 378/18), under the authority of the Fire Protection and Prevention Act, 1997 (FPPA), O.Reg. 378/18 "requires that each municipality and every fire department in a territory without municipal organization complete a community risk assessment and use it to inform decisions on the provision of fire protection services."[2] A community Risk Assessment (CRA) is a comprehensive evaluation of potential risks and vulnerabilities within a specific community. It is a vital process designed to identify, assess, and prioritize various risks, such as natural disasters, industrial accidents, public health emergencies, and other hazards that impact the safety and well-being of the community residents.

Risk can be managed by either accepting the risk, insuring against damages, or investing in risk prevention and mitigation strategies. Local governments typically employ a combination of these approaches. In general, the risks and management strategies of a community are relative to a municipality's financial capacity, geography, population demographics, fixed assets, and critical infrastructure, as well as overall service delivery.

Conducting a risk assessment is the first step towards establishing a strategic plan to manage community risks based upon local fire department response capabilities. The results are used to assist the municipality in making informed decisions regarding the allocation of limited fire prevention and fire response resources.

The introduction of O. Reg. 378/18 is also now a core component to satisfy the FPPA requirements of developing an in-depth analysis of a community's fire related risks through a comprehensive analysis of nine mandatory profiles which include:

1. Geographic profile
2. Building stock profile
3. Critical infrastructure profile
4. Demographic profile
5. Hazard profile

[2] *Community Risk Assessment: Office of the Fire Marshal OFM-TG-02-2019, 2019.*

6. Public safety response profile
7. Community services profile
8. Economic profile
9. Past loss and event history profile

The information and data gathered to address each of the profiles will assist in determining and prioritizing risks to public safety in the community and determining the fire protection services to be provided by municipalities to address those risks.

Risks were identified using historical response data, hazard risk vulnerability assessments and information from our interviews to develop a risk profile for the community. The evaluation of fire and rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

The Ontario Fire and Prevention Act 1997, Ontario Regulation 378/18 Community Risk Assessments contains a mandatory requirement for the municipality or fire department to complete a community risk assessment no later than five years after the day its previous community risk assessment was completed.

Additionally, the municipality or fire department must also complete a review of its community risk assessment no later than,

1) 12 months after,
    a) the day its community risk was completed; and
    b) the day its previous review was completed.
2) Whenever necessary, the municipality or fire department must revise its community risk assessment if it's necessary to reflect,
    a) any significant changes in the mandatory profiles, or
    b) any other significant matters arising from the review.

The Township of Lucan Biddulph is a rural farming community in southwestern Ontario within Middlesex County and includes the urban settlements of Lucan and Granton. The remaining settlement areas are comprised of small, isolated areas of residential development. It is conveniently located 27 km north of London (city centre), 36 km west of Stratford, 40 km east of Grand Bend, and 194 km west of Toronto's city centre. The Bluewater Bridge Port of Entry to Canada/US is located 102 km to the southwest.

The Township has a land-based area of 169.08 km^2, with a population density of 33.6 per km^2.[3] The land use area is predominantly for agricultural and residential purposes. Due to the highly

[3] *Statistics Canada. 2023. (table).* Census Profile*. 2021 Census of Population. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released March 29, 2023. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E (accessed June 14, 2023).*

productive soils in the area, much of it has been developed to serve cash crops and livestock farming, while woodlands account for less than five percent of the total land area. The Little Ausable River valley passes in a north-south direction of the westerly portion of the township and is considered a significant natural heritage feature of the area[4].

The Village of Lucan is in the west-central portion of the township. It has a population of 3,089 with a land base area of 2.01 km and population density of 1,534.7 per km^2. It is considered the commercial and administrative centre of the township, and given its proximity to the City of London, provides affordable housing for commuters to the city. The downtown core is relatively compact and is roughly one block deep along the main street.

It has a small industrial zone in terms of scale and employment, west of the downtown core on William Street, which is dominated by an aged grain handling facility, as well as an industrial park north of the village on Fallon Drive and Saintsbury Line, which is the location of the village's sewage treatment plant and a large industrial coating facility. Lots in this industrial area are currently for sale and future development is anticipated.

The Village of Granton is in the east end of the township. It has a population of several hundred. It once had a commercial core, however, now is comprised of a compact residential area. It has a small industrial land use area mostly dedicated to a grain handling facility situated at the east-end of Levitt Street.

Every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. Some general examples of challenges that may impact community risks include:

- Fire/rescue service model and response capacity
- Population and demographics
- Population growth rate
- Industry types
- Economy
- Rate of development
- Transportation corridor types
- Typography
- Weather
- Historical response data

The evaluation of fire and rescue-related risks consider both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

[4] *Township of Lucan Biddulph Official Plan 2015*

The township's Hazard Identification and Risk Assessment (HIRA) was reviewed and updated in December 2020 indicating that the township has complied with its legislative requirements, however the HIRA should be re-visited to ensure accuracy. As a component of the risk assessment and risk analysis process, the top risks in Lucan Biddulph were identified. The HIRA assigned likelihood and consequence levels to a list of hazards based on the potential for impacts to people, property, and the environment. As a result of this analysis, the top hazards in the township include the following:

- Hazardous materials incident
- Air transportation incident
- Pandemic/epidemic
- Cyber attack
- Petroleum emergency
- Severe weather (tornado, wind)
- Snowstorm
- Extended power outage

In addition to the overall highest risks to the community, certain events pose an increased risk specific to firefighting. To better understand the risks of hazards as they pertain to fire protection services, the hazards have been assessed within the community risk assessment to identify possible impacts on fire protection services. Many of the potential impacts are not unique to a jurisdiction. The results of this review as they pertain to the top hazards in the township the same as listed above.

Department Overview

The current Lucan Biddulph Fire Services (LBFS) consists of two separate services with trained volunteer firefighters serving out of two fire separate and distinct fire stations, including Lucan Biddulph (Lucan) fire station and Biddulph Blanshard (Granton) fire station. They provide fire, rescue, and medical first response services to the township of Lucan Biddulph and a defined response area in the Township of Perth South.

The Lucan Fire Station is led and managed by a fire chief along with a volunteer deputy chief. The roster consists of 24 volunteer firefighters including three captains, one training officer and one designated fire prevention/training officer. An additional fire prevention officer is currently being utilized on a contractual basis. The Lucan fire station has recently moved from four squads to three to provide the necessary response capacity to their fire protection demand zone. Each squad is led by a volunteer captain with firefighters assigned to each.

The Granton Fire Station is led and managed by a fire chief along with a volunteer deputy chief. The fire station roster consists of 24 volunteer firefighters including four captains, four training officers and one designated fire prevention/training officer. An additional fire prevention officer is currently being employed on a contractual basis. The Granton station has four squads to provide the necessary response capacity to their fire protection demand zone. Each squad is led by a captain with firefighters assigned to each.

Summary of Observations and Recommendations

The intent of this Fire Services Master Plan is to provide a series of recommendations to be implemented over a ten-year timeframe. However, the recommendations in this plan were prioritized in such a way that it was felt all should be completed within five years. The following recommendations are drawn from findings presented throughout the report. They are grouped into three categories according to priority: critical, short-term, and long-term.

Progress on the implementation of recommendations should be monitored and potentially adjusted to reflect available funding and administrative capacity that may go beyond the five years identified. Most of the recommendations presented in this report are achievable using existing staff or members' time and will therefore not pose significant additional costs to the community, however some recommendations are substantial and will require review of potential funding or financial strategies. Costs are rough order of magnitude estimates only and will require further investigation.

'Cost neutral' refers to the use of internal staff through a normal work schedule. This would include support from volunteers and other internal departments that may or may not require additional resources (costs) to complete. Undertaking of these cost neutral recommendations are also contingent upon staff availability.

A timeframe within 1 – 60 months (1 – 5 years) has been assigned to each recommendation, recognizing that the start and completion of any recommendation is based on annual corporate priorities and council approved budget allocations.

Critical	Short Term	Long-Term
1 -12 months	12 - 48 months	48 - 60 months

Note: *Observations and recommendations are numbered based on how the appear in the report.*

Observation #1: A service delivery policy identifies high and extreme risks in a community and measures the current performance of the fire service to ensure these risks are managed safely. The township currently does not have a service delivery policy that is approved by Council. This policy is used to define core services, service levels and outline performance reporting requirements. Where service gaps are identified, the analysis of the unique and common risks in specific demand zones provide elected officials with the information required to make informed service level decisions. This information can be used to identify performance reporting requirements. Appropriate levels of performance reports can be shared with key stakeholders and inform the public.

The information gathered in the service delivery policy process can be shared both at the senior administrative and elected official levels. This can facilitate a purposeful and informed decision-making framework for both these groups of officials regarding the need for specific services, setting service levels, allocating funding, and establishing performance goals for LBFS.

Once completed, a service delivery policy may be shared with the public to provide clarity with respect to services provided and service level expectations. The information/data contained in the community risk assessment is foundational in the development of the SOC policy.

Reference: Section 2.14.1 Fire Station Response Demand Zone, Page 25

> ***Recommendation #1: Develop a service delivery policy for all demand zones within the township and contracted areas that includes the analysis and risk factors identified in the community risk assessment.***
>
> *(Suggested completion: 48-60 months)*
>
> > ***Rationale:*** *A service delivery policy offers several benefits to the operation and governance of LBFS. A comprehensive risk analysis completed at the level of individual demand zones would identify all high, extreme, and unique risks within the different demand zones. It also involves a complete review of existing services and service levels, standard operating guidelines and policies, a review of fire department resource distribution and concentration based on risk factors, and fire department performance measurement and reporting.*
> >
> > *After completing this review, the results should be compiled into a single document and presented to council.*

Observation #2: It was identified in the 2018 Asset Management Plan that several upgrades to the Lucan Booster Pumping Station (approved for 2019) and water network system were needed to meet current demand and fire flow requirements. Projects were estimated to commence in 2019, with the bulk of upgrades to begin in 2030 (or earlier) and be completed by 2033[5]

Reference: Section 2.15 Water Infrastructure, Page 26

[5] *Township of Lucan Biddulph Asset Management Plan 2018*

Recommendation #2: The township upgrade the water main system to meet demand and fire flow requirements and establish a firefighting water plan that includes alternative sources or a superior tanker shuttle service.

(Suggested completion 36-48 months)

Rationale: *Water supply is a critical infrastructure/service that is essential for firefighting. Having access to the township's water delivery systems and sources is critical to service delivery.*

Observation #3: The Township of Lucan Biddulph's By-law #67-2001 Establishing By-law; "A by-law to Establish and Regulate a Fire Department" is more 22 years old. Provisions within this bylaw such as department composition including the Granton Station, fire prevention programs, and firefighter training are not identified in this bylaw. This observation has direct implications for the service policy, service levels response matrix, critical tasks, and staffing levels recommendations contained in this report.

Reference: Section 3.1 Department Overview, Page 28

Recommendation #3: Conduct a complete revision and update of the Establishing By-law.

(Suggested completion: 24-36 months))

Rationale: *While not a regulation, municipal by-laws should be reviewed and updated on a recurring basis with a suggestion of every five years as a leading practice. Aspects such as the governance structure, fire prevention and training programs, service policy, and formalized core services should be considered in this review.*

Observation #4: The agreement between Lucan Biddulph and Perth South to create the Biddulph Blanshard Fire Department aligns with all provincial legislation. The contract was last revised in 2011 and may require review and update, to ensure currency. Under this agreement, clause 8 requires the fire equipment to be in a fire station in the community of Granton and ensure that the equipment is available to the township of Perth South. This would require further discussions with the fire board and Perth South should there be consideration to relocate a station outside of Granton.

The agreement also allows for either municipality to withdraw prior to the end of the term. It requires notice with a transition period of January 2nd in the 2nd year after notice provided. Withdrawing from said agreement would also require the municipality to pay all liabilities of the Fire Board, which could include severance of any paid employees and would require the withdrawing municipality to pay its percentage share of assets. Should Lucan Biddulph wish to terminate the contract, they would be required to pay out 50% costs for any station, vehicles, and equipment to Perth South.

Reference: Section 3.1 Department Overview, Page 28

Recommendation #4a: The Township of Lucan Biddulph to start discussions with Perth South to explore termination of the Biddulph Blanshard Fire Department and Fire Board, which should include the value of assets and any liabilities the Fire Board has responsibilities for.

(Suggested completion 1-24 months)

Recommendation #4b: The Township of Lucan Biddulph explores opportunities to further provide fire protection services to areas in Perth South currently covered by the joint Fire Board, through a fire protection 'fee-for-service' agreement.

(Suggested completion 1-24 months)

> ***Rationale:*** *To restructure the operations and administration of fire services in the township under one organization, the township would require the termination of the agreement with Perth South and the dissolving of the Fire Board.*
>
> *The current agreement is a long-standing practice and requires full understanding the actual assets and their values assigned to Biddulph Blanshard. It will require 13-24 months to complete any termination as identified under the contract, thus the earlier the discussion begin the sooner the understanding and impacts to any such termination.*

Observation #5: The LBFS is functioning remarkably well with no evidence of significant turnover. In fact, there is a waiting list to join either service. Furthermore, the response analysis at Section 4 indicates that the total response time 80th percentiles are within leading practices. Both the Lucan and Granton stations maintain a positive and professional interaction between them which is an indication of both fire chiefs' leadership.

Notwithstanding operational observations around alarm handling and processes, response records management, achievement of an effective response force and the need for core service delivery performance targets, the LBFS is an exemplary fire service that is serving the community very well. However, maintaining two separate fire services in a township of approximately 5000 people is not a contemporary service structure. The current administrative and governance level of maintaining two separate fire services within the one township results in duplication, authority having jurisdiction complexities, inconsistencies, and reduced interoperability between the two services.

For example, there are different fire board governance structures, separate compensation processes for the volunteers, duplicate operational and capital budget processes, duplicate agreements for medical co-response, separate operational guidelines, and separate training programs and services. While there several complexities such as the inter-municipal bylaw with Perth South, disposition of shared capital assets, perceptions around loss of autonomy, identity and community affiliation, and public reaction, the LBFS should be a fully integrated single cohesive fire service.

There are several options to achieve this, and regardless which structure is preferred it will require an incremental approach of up to 5 years with extensive consultation, communication and engagement with the volunteer firefighters, fire boards, councils from Lucan Biddulph and Perth South and the public. Integration of administrative and governance processes along with the emergency response operations, firefighter training, fire prevention and public education

programs should yield some cost savings. A complete financial analysis will be required as part of any integration initiative other than status-quo.

Reference: Section 3.1 Department Overview, Page 28

Recommendation #5: Initiate the integration of the Lucan Biddulph Fire Service into a single unified service.

(Suggested completion: (1 – 60 months)

Rationale: *Should the decision be to undertake the integration of the LBFS, the recommended approach would be to commence discussions with the fire chiefs and firefighters at the operational level to establish the core services and the recommend service delivery policy. Explore opportunities for joint training and fire prevention programs and engage in consultations around a single cohesive service. Administrative, financial, and governance changes can be initiated when the operational integration has been completed. In our opinion, the preferred option is full integration undertaken by incremental steps with comprehensive consultation, communication, and engagement over a 1–5-year timeline.*

The outcome would be streamlined administrative, financial, and governance processes and the transformation of the Lucan Biddulph Fire Service into a cohesive team that fully supports working together to improve service delivery and public safety.

Table 1: Administrative and Governance Options

Option	Details	Advantages	Disadvantages
Status-quo	- Two Fire Boards as 1st level governance with Township as AHJ - Separate services under two fire chiefs - Duplicate emergency response operations, firefighter training, fire prevention and public education programs	- At present working well - No cost increases	- Duplication, authority having jurisdiction complexities, inconsistencies, and reduced interoperability between the two services. - Different fire board governance structures, separate compensation processes for the volunteers, duplicate operational and capital budget processes, duplicate agreements for medical co-response, separate operational guidelines, and separate training programs and services. - Increase administrative costs
Full integration (Recommended Option)	- Dissolve fire boards. Regional fire chief with one district chief. Lines of accountability to CAO with Council as AHJ - Rescind inter-municipal bylaw with Perth South. - Fee for service agreement with Perth South	- Streamlines and clarifies lines of accountability. Reduces duplication of services and costs. Consistencies for administrative and operational processes. - Enhances operational effectiveness and interoperability.	- Disposition of shared capital assets - Need to develop new fee for service agreement with Perth South - Potential for perceptions around loss of autonomy, identity and community affiliation, and political and public reaction and resistance
Partial Integration	- Two response districts with a single fire chief and one district chief - Biddulph Blanshard Fire Area Board established as standing committee of Council to oversee the Perth South and Granton fire protection districts. - Integration of administrative and financial management - Operational integration of both services	- Streamlines and clarifies lines of accountability. Reduces duplication of services and costs. Consistencies for administrative and operational processes. - Retains current inter-municipal bylaw with Perth South - Enhances operational effectiveness and interoperability. - Reduces potential for perceptions around loss of autonomy, identity, and community affiliation, and political and public.	- Some residual duplication, and authority having jurisdiction complexities, - Potential for perceptions around loss of autonomy, identity and community affiliation, and political and public reaction and resistance

Observation #6: The Granton Station does not appear to have formal policy on volunteer firefighter expectations, working conditions, and compensation.

Reference: Section 3.2.2.2 Granton Fire Station, Page 36

Recommendation #6: Develop a comprehensive policy document that details firefighter expectations, working conditions, and compensation formula for both the Lucan and Granton Station.

(Suggested completion: 6-12 months)

Rationale: *An approved policy document that details the expectations, working conditions and compensation formula will provide operational expectations for the firefighters and the townships they serve.*

Observation #7: Currently the Township maintains two separate and different compensation structures for the firefighters. The current remuneration process was not identified as a critical issue, however the monetary value placed on volunteer firefighters must be constantly monitored and amended to ensure a competitive wage rate and benefits are aligned with surrounding communities. Additionally, the compensation formulas for are not consistent between the two fire services. While this has not been raised as a concern, it could become an issue in the future.

Reference: Section 3.3.1Remuneration, Page 43

Recommendation #7: Establish a consistent wage structure for all volunteer firefighter positions.

(Suggested completion: 12-24 months)

Rationale: *The typical wage structure for volunteer fire services is an hourly rate for the various positions (firefighter, officers, and chief officers) combined with incentives for training, practice session participation, and attendance at emergencies. Wage rates are normally determined through comparisons with adjacent and similar services.*

Observation #8: LBFS typically has a loss of 2-5 volunteer firefighters each year to resignation or retirement which requires replacement by new inexperienced POC volunteer firefighters. It is important to note that recruitment and retention of volunteer firefighters is a prevalent challenge across Canada and the U.S. The attraction and volume of applications received in recent recruitment initiatives for volunteer firefighters has been stable for LBFS.

Reference: Section 3.3.4 Retention, Page 46

Recommendation #8: Both Lucan and Granton fire chiefs should continue to evaluate the ability to sustain a viable firefighting complement and develop retention strategies such as live- in, live-out, work experience programs, tax breaks, and benefits that enhance volunteer retention and operational effectiveness.

(Suggested completion: 1-12 months (ongoing))

Rationale: *The fire service relies on sufficient fully trained volunteer firefighters in each of their fire stations to deliver necessary emergency services to their community. While both fire services currently have waiting lists for potential new recruits, this may not always be the case. The timelines to recruit and train new firefighters is typically close to a year which necessitates advance anticipation of recruit volunteer firefighters' numbers. Retaining an experienced, solid core of fully trained volunteer firefighters lessens the financial impact and service level gaps to LBFS and their community. Keeping experienced firefighters in the organization performing other non-emergency operations can also enhance the overall effectiveness of the service.*

Observation #9: The Granton fire station does regular Tuesday night training that starts at 7pm and continues until the required training is completed. Lucan fire station schedules their training nights similarly, however, caps the training at one hour. The survey confirms that the members believe one hour training sessions are not enough.

Reference: Section 3.4 Training, Page 47

Recommendation #9: Amend current weekly training to a minimum of two hours for both stations.

(Suggested completion: 6-12 months)

Rationale: *Limiting the weekly training time to one hour is not an efficient use of time required to maintain skill competencies or effectively deliver necessary core training.*

Observation #10: Lucan Biddulph has an established health and wellness program for their staff; however, the fire service does not have a dedicated health and wellness program tailored specifically for the unique needs of a firefighter.

Reference: Section 3.5 Health and Wellness, Page 50

Recommendation #10: Develop a unique mental health and wellness program for LBFS to meet the specific needs of their firefighters.

(Suggested completion: 6-24 months)

Rationale: *An important component within the core services of a fire service is **r**ecognizing the unique workplace challenges that firefighters endure. Making available industry specific mental health and wellness and peer-to-peer program for the mental and physical wellbeing of firefighters is strongly recommended.*

Observation #11: LBFS does not have an aerial apparatus within their fleet inventory. Should an aerial apparatus be required for response in the municipality, it would be requested from South Huron Exeter Municipality. The delay or inability to have an aerial apparatus on scene can seriously hinder the safe and effective operations. Also, there is no assurance that this apparatus will be available to leave from their respective community.

Reference: Section 3.6.1 Structural Firefighting, Page 51

Recommendation #11: Conduct a needs assessment for an aerial apparatus to be added to LBFS fleet.

(Suggested completion: 1-24 months)

Rationale: *The requirement of an aerial apparatus on many emergency scenes is critical for safe and effective firefighting and rescue operations. Aerial apparatus is typically required for:*

- *Elevated water streams*
- *Roof top fire attack/entry*
- *Elevated evacuations and rescues*
- *Water curtains*
- *Exposure protection*

The development plans anticipate an increase in commercial, residential (low, medium, and high density) which may increase the need for an aerial apparatus, however response statistics within the community and even in the surrounding areas do not warrant the outright purchase of this type of unit.

The cost of purchasing a new aerial apparatus, in today's current market, may cost in the range of 1.75M to 2.5M dollars. Also, the anticipated timelines to put an aerial into operation could be two years or more and costs will typically rise during the build process of a typical apparatus purchase. Owning and operating this type of apparatus should also consider the cost of training and maintenance as well as storage. This type of apparatus requires indoor storage.

Observation #12: There are two challenges with the current tiered response agreements; first these agreements identify the tiered response criteria but do not identify the response capabilities in terms of medical qualifications or performance targets. Second, based upon the references provided, these medical co-response tiered agreements do not appear to be authorized by the Lucan Biddulph Council.

Reference: Section 3.6.2 Medical Co-Response, Page 53

Recommendation #12: Update the Establishing and Regulation Bylaw confirming medical co-response as a core service, and further that the response performance capabilities be formally established and approved.

(Suggested completion: 6–24 months)

Rationale: *The authority having jurisdiction for the provision of municipal services is the Township of the Lucan Biddulph Council unless formally relegated to CAO or fire chief for medical co-response.*

Observation #13: LBFS conducts regular familiarization tours with their firefighters on identified industry or high hazard occupancies and does not have a formal pre-incident planning program.

Reference: Section 3.6.6.5 Pre-Emergency Planning*, Page 57*

Recommendation #13: Develop a formal pre-incident planning program that will capture risks, fire protection systems, access and egress avenues and other factors relevant to an emergency response to a given property.

(Suggested completion: 6-24 months)

Rationale: *Developing pre-incident plans along with a method that ensure this information is accessible by any responding crew for identified high risk properties will enhance the effectiveness and safety of responding crews.*

Observation #14: As per the Community Risk Assessment residential occupancies represent 73.84% of the township's existing property stock and presents the highest fire risk. Residential fires occur annually and account for the second highest fire loss category. Although there have no fatalities reported in the township between 2018 -2022, province statistics identify 87.25% of fatalities occur in Group C – Residential occupancies during this same period.

Further it was identified that 49.88% of the township's residential building stock was built prior to the introduction of the 1981 Ontario Fire Code. This could indicate that almost 50% of the residential buildings likely do not have wired interconnected smoke alarms creating a greater risk for early detection and early notification of fire. Seniors aged 65 and older represent over 15% of the total population with the greatest concentration of this group residing in rural areas.

Reference: Section 3.6.6.4 Fire Public Education Services (Section 2.4 Key Community Demographics), Page 57

Recommendation #14: Establish resources to develop, implement and measure fire and life safety education programs identified in the Community Risk Assessment.

(Suggested Completion:12 - 24 months)

Rational: *The Fire Protection and Prevention Act requires a municipality to establish a program for fire protection services which must include public education with respect to fire safety and certain components of fire prevention. Provincially, the number of preventable fire deaths are increasing, and evidence shows that most of these fires are occurring in residents with the lack of working smoke alarms. A robust and targeted fire education program will help shape and adjust behaviour of all risk groups.*

Observation #15: Both LBFS fire stations are well maintained, clean and kept tidy. Each station was constructed and/or refurbished to meet the needs of the fire service of the time. However, both the Lucan and Granton fire stations are at maximum capacity, with little to no growth potential within their current footprints. The present size of the apparatus bays constrains future apparatus length and height without requiring significant renovations. This issue is of particular concern should the LBFS require an aerial device.

Reference: Section 3.9.1 Fire Station Overview and Assessment, Page 60

Recommendation #15: Undertake a complete condition and functional assessment of both fire stations to support LBFS' core services and determine the long-term life cycle of these capital assets.

(Suggested completion: 36-60 months)

Rationale: *Conducting a facility assessment at each of the two fire stations will assist to determine and plan whether status quo, replacement, refurbishment, re-location, or closure is the most prudent approach to managing the current and future fire department needs of the municipality. Together with the future growth projections in each of the fire station response zones this fire station functional analysis typically focuses on the following:*

- *Sufficient apparatus bay to safely and effectively garage and maneuver emergency response vehicles and apparatus.*
- *Firefighter staging and personal protective equipment storage.*
- *Equipment storage, maintenance, and decontamination areas*
- *Training and fitness area*

Staff support areas such as workstations, offices, kitchen, rest areas, washrooms, and showers (non-gender or gender specific).

Observation #16: There is an established apparatus and emergency vehicle replacement schedule and reserve fund. This schedule anticipates the retirement of most apparatus and emergency vehicles at 25 years. Financial resources are set aside in their fire equipment and apparatus reserve fund in anticipation of upcoming replacements. It has not been determined whether this fund is sufficient to meet the life cycle replacement needs of the fire service.

Reference: Section 3.10.6 Fire Apparatus Replacement and Dispersal, Page 76

Recommendation #16: Conduct a comprehensive internal study of the reserve fund process of fire equipment and emergency vehicle to meet life cycle requirements and update as required.

(Suggested completion: 12-18 months)

Rationale: *Fire apparatus is routinely utilized under extreme conditions for long periods of time. The reliability of these critical pieces of equipment cannot be suspect. As stipulated in NFPA 1901, frontline apparatus is required to maintain a 95% in service status.*

Updating all apparatus and emergency vehicle replacement schedules will assist with ensuring sufficient timelines for replacement process and necessary funds are there when needed.

Observation #17: Survey results have indicated that there is confidence in the PPE that is issued to each firefighter. Proper cleaning and repair processes are in place in both fire stations. However, there was concern expressed that firefighters are required to share face pieces for the SCBA. Industry best practices suggest issuing individual face pieces to firefighters that are properly sized and fitted are an important measure for firefighter safety.

Reference: Section 3.12 Personal Protective Equipment, Page 81

Recommendation #17: Provide individual SCBA face pieces to each firefighter in the LBFS.

(Suggested completion: 12-24 months)

Rationale: *Proper fitting face pieces are an important health and safety measure that must be done. Recurring face piece fittings are to be confirmed annually through proper testing protocols.*

Observation #18: LBFS does not have a comprehensive asset management program for all capital and operational inventory that tracks the history of each piece from purchase to disposal.

Reference: Section 3.14 Asset and Records Management, Page 82

Recommendation #18: Procure a stand-alone asset management system for the fire service.

(Suggested completion 24-36 months)

Rationale: *Determining efficiencies and cost effectiveness while ensuring proper asset tracking and management will assist with ensuring LBFS has the necessary functional assets required to perform the roles expected of them.*

Observation #19: A significant portion of incidents are related to false incidents with a majority related to malfunctioning fire or CO alarm equipment.

Reference: Section 4.2 Incident Types and Frequency Analysis, Page 89

Recommendation #19: Conduct an in-depth analysis to determine the current trends of 'alarms ringing' with the view to initiate preventative measures to reduce the occurrence and costs of false alarms.

(Suggested completion: 12-24 months)

Rationale: *High volume of False Incidents adds additional workload to volunteer departments and has the potential to create apathy and low turnout numbers. This results in lower resources in the instances where a real emergency exists. Effective public education, as well bylaws including proper enforcement penalties and fees for recurring and/or nuisance alarms will assist with minimizing unnecessary draw on resources.*

Observation #20: The 90th percentile alarm processing performance is trending upward and was approximately twice as much as the recommended 60 seconds in 2020 and 2022. There may be numerous reasons for the extended times for alarm processing including the increased time taken to determine incident locations in rural areas, dispatcher turnover, and potential technology or process challenges.

Reference: Section 4.4 Emergency Response Performance Analysis*, Page 101*

Recommendation #20: Work with Middlesex County to Investigate opportunities to reduce station notification processes and identify opportunities to reduce alarm processing time.

(Suggested completion: 12-24 months)

Rationale: *Alarm processing impacts fire department response and intervention times. Efforts to reduce this time segment has the immediate impact of reducing overall response time. Potential solutions to consider may include fire department pre-alerting, rural addressing improvements, alarm processing quality assurance and enhance computer-aided dispatch response recommendations.*

Furthermore, this data should be entered consistently into the departments Records Management System and reported through the Provincial Office of the Fire Marshal.

Observation #21: The two stations are appropriately located in the Township to provide excellent response time to the locations where most emergencies occur. The longer assembly times for the Granton Station are normal for a volunteer department where staff need to first respond to the station before donning their PPE and leaving in the fire apparatus. Given the lower population density differences, it is reasonable to assume firefighters are more likely to live further away from the station located in Granton when compared to Lucan.

Reference: Section 4.5 Response Coverage Analysis, Page 108

Recommendation #21: Implement incident reporting procedures to record the time that apparatus leave the station, the number of firefighters on each apparatus, firefighters that respond directly to scene, and any firefighters remaining at the station.

(Suggested completion: 12-24 months)

Rationale: *It is recommended that the Lucan Biddulph Fire Service implement additional data reporting processes to evaluate compliance to the NFPA 1720 standard. Although response time is excellent overall, without confirming the number of personnel at the 10- or 14-minute mark, it is impossible to confirm what the NFPA compliance is.*

Observation #22: LBFS standard operating guidelines do not identify the number of firefighters and resources required to complete tactical or critical tasks. Critical task analyses will clarify incident resource requirements and identify the critical tasks to clarify firefighter tasks and manage an incident efficiently and safely. The assembly time discussed in the report needs to be established for the convergent ERFs used by LBFS. A common practice for POC services is to have one officer and three firefighters either onboard before exiting the station for the first alarm assignment, or fully established on scene before attempting the required critical tasks.

Reference: Section 4.7 Critical Task Analysis, Page 116

Recommendation #22: Complete critical task analyses for common incident types in response SOGs as a component of completing the service delivery policy.

(Suggested completion: 12-18 months)

***Rationale**: POC volunteer staffing models are limited by firefighter availability and ability to respond. Occasionally this limitation can result in inadequate staffing for more complex and larger incidents. As a result, tactics and critical tasks should be scaled to reflect available resources. For example, if the number of assembled firefighters or water supply are not sufficient to support an interior fire attack or rescue, fire tactics should be limited to exterior and defensive operations. Critical task analyses should be used to identify operational limitations in policy to clarify incident command objectives and maintain safe operations.*

Observation #23: LBFS does not routinely monitor and report response performance. The current process of collecting data and developing reports is largely reliant on manual processes. The ability to collect reliable data and identify changes in service demand and response performance is an important management function. Further, the ability to measure and report performance is critical in maintaining department accountability and transparency for response performance.

Reference: Section 4.8 Measuring, Managing and Reporting Performance, Page 120

Recommendation #23: Expand the implementation of an RMS to the Lucan Biddulph stations and add the capability to support automated data transfer from dispatch and expanded reporting.

(Suggested completion 12-24 months)

***Rationale:** Fire departments have access to large amounts of data. However, the data only becomes useful if it can be developed into meaningful reports. Manual entry of data is both time consuming and prone to errors. Further, the correction of any errors compounds the inefficiency of this process. Contemporary CAD and fire department RMS systems can be integrated to streamline the data capture process. An RMS can typically be programmed to produce reports and queries to investigate specific topics or incidents.*

Observation #24: As previously identified LBFS does not routinely monitor and report response performance. The current process of collecting data and developing reports is largely reliant on manual processes. One approach to providing timely information to fire staff is to develop a performance dashboard. CAD and RMS technologies must be integrated to support this tool. Figure 17 provides an example of the information that could be reported on a performance dashboard.

Reference: Section 4.8 Measuring, Managing and Reporting Performance, Page 120

Recommendation #24: Develop as part of the RMS implementation the capability to support data transfer and the regular reporting of emergency response performance.

(Suggested completion: 12-24 months)

Rationale: *Performance measurement and reporting are foundational elements in managing and improving performance in the fire service. Modern RMS systems should support the functionality to import response data and streamline report generation. These technologies simplify the conversion of data into useful information.*

	Recommendation	'23	'24	'25	'26	'27	'28	Source	Est. Cost	Comments
1	Develop a service delivery policy for all demand zones within the township and contracted areas that includes the analysis and risk factors identified in the community risk assessment.							Staff time	Cost neutral	
2	The township upgrades the water main system to meet demand and fire flow requirements and establish a firefighting water plan that includes alternative sources or a superior tanker shuttle service.							Capital budget	To be determined	Costs are based upon project implementation schedule over the next 7 years if completed by 2030
3	Conduct a complete revision and update of the Establishing By-law.							Staff time	Cost neutral	
4a	The Township of Lucan Biddulph to start discussions with Perth South to explore termination of the Biddulph Blanshard Fire Department and Fire Board, which should include the value of assets and any liabilities the Fire Board has responsibilities for.							Staff time	Cost neutral	Some costs may occur to complete operational, administrative and governance integration. A separate costing analysis is identified
4b	The Township of Lucan Biddulph explores opportunities to further provide fire protection services to areas in Perth South currently covered by the joint Fire Board, through a fire protection 'fee-for-service' agreement.							Staff time	Cost neutral	Some costs may occur to complete operational, administrative and governance integration. A separate costing analysis is identified
5	Initiate the integration of the Lucan Biddulph Fire Service into a single unified service.							Staff time	Cost neutral	

	Recommendation	'23	'24	'25	'26	'27	'28	Source	Est. Cost	Comments
6	Develop a comprehensive policy document that details firefighter expectations, working conditions, and compensation formula for both the Lucan and Granton Station.							Staff time	Cost neutral	
7	Establish a consistent wage structure for all volunteer firefighter positions.							Staff time	Cost neutral	Depending on the preferred wage structure, the reallocation of current compensation budgets under an integrated structure should not necessarily result in a cost increase.
8	The fire chiefs should continue to evaluate the ability to sustain a viable firefighting complement and develop retention strategies such as live- in, live-out, work experience programs, tax breaks, and benefits that enhance volunteer retention and operational effectiveness							Staff time	Cost neutral	
9	Amend current weekly training to a minimum of two hours for both stations.							Staff time	Cost neutral	Cost implications for firefighter compensation due to longer training sessions if when implemented
10	Develop a unique mental health and wellness program for LBFS to meet the specific needs of their firefighters							Staff time	Cost neutral	

	Recommendation	'23	'24	'25	'26	'27	'28	Source	Est. Cost	Comments
11	Conduct a needs assessment for an aerial apparatus to be added to LBFS fleet.							Staff time	Cost neutral	
12	Update the Establishing and Regulation Bylaw confirming medical co-response as a core service, and further that the response performance capabilities be formally established and approved.							Staff time	Cost neutral	Potential for some legal costs to develop the revised bylaw. Estimated to be $10K
13	Develop a formal pre-incident planning program that will capture risks, fire protection systems, access and egress avenues and other factors relevant to an emergency response to a given property									
14	Establish resources to develop, implement and measure fire and life safety education programs identified in the Community Risk Assessment							Operating Budget	To be determined	Contingent on PT or FT staffing to provide targeted public education programming
15	Undertake a complete condition and functional assessment of both fire stations to support LBFS' core services and determine the long-term life cycle of these capital assets							Staff time	Cost neutral	Based upon township staff conducting the assessment. Otherwise, contracted assessment is estimated to be $20K
16	Conduct a comprehensive internal study of the reserve fund process of fire equipment and emergency vehicle to meet life cycle requirements and update as required.							Staff time	Cost neutral	Increase to capital reserves is potential outcome and is based upon the lifecycle criteria approved
17	Provide individual SCBA face pieces to each firefighter in the LBFS							See local supplier	$525-$625	Cost per face-piece depending on manufacturer

	Recommendation	'23	'24	'25	'26	'27	'28	Source	Est. Cost	Comments
18	Procure a stand-alone asset management system for the fire service							Operating budget	Variable	Based upon type of system procured. Rough estimate is $15-25K with recurring licensing costs.
19	Conduct an in-depth analysis to determine the current trends of 'alarms ringing' with the view to initiate preventative measures to reduce the occurrence and costs of false alarms							Staff time	Cost neutral	
20	Work with Middlesex County to Investigate opportunities to reduce station notification processes and identify opportunities to reduce alarm processing time							Staff time	Cost neutral	
21	Implement incident reporting procedures to record the time that apparatus leave the station, the number of firefighters on each apparatus, firefighters that respond directly to scene, and any firefighters remaining at the station							Staff time	Cost neutral	
22	Complete critical task analyses for common incident types in response SOGs as a component of completing the service delivery policy							Staff time	Cost neutral	
23	Expand the implementation of an RMS to the Lucan Biddulph stations and add the capability to support automated data transfer from dispatch and expanded reporting							Operating budget	Variable	Part of recommendation 16

	Recommendation	'23	'24	'25	'26	'27	'28	Source	Est. Cost	Comments
24	Develop as part of the RMS implementation the capability to support data transfer and the regular reporting of emergency response performance.							Operating budget	Variable	Part of recommendation 16

Conclusion

The goal of developing this Fire Services Master Plan is to conduct a comprehensive review of the Township of Lucan Biddulph fire service and produce a strategic plan for the next 5 years. This will provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

The LBFS is functioning remarkably well with no evidence of the typical challenges with volunteer services such as turnover, retention and recruitment. The emergency response capabilities analysis indicates that the total response time 80th percentiles are within leading practices. Both the Lucan Biddulph and Granton Station maintain a positive and professional interaction between them which is an indication of both fire chiefs' leadership

There are several observations and recommendations provided in this master plan to improve operational effectiveness and efficiencies and enhance administrative and governance processes. Key among the 24 recommendations is:

- Develop a service delivery policy for all demand zones within the township and contracted areas that includes the analysis and risk factors identified in the community risk assessment.
- Conduct a complete revision and update of the Establishing and Regulate a Fire Department by-law #67-2001.
- Initiate the integration of the Lucan Biddulph Fire Service into a single unified service.
- Conduct a needs assessment for an aerial apparatus to be added to LBFS fleet.
- Confirm medical co-response as a core service, and that the response performance capabilities be formally established and approved by Council.
- Develop a formal pre-incident planning program that will capture risks, fire protection systems, access and egress avenues and other factors relevant to an emergency response to any given property.
- Undertake a complete condition and functional assessment of both fire stations to support LBFS' core services and determine the long-term life cycle of these capital assets.
- Conduct an in-depth analysis to determine the current trends of alarms ringing with the view to initiate preventative measures to reduce the occurrence and costs of false alarms.
- Work with Middlesex County to Investigate opportunities to reduce station notification processes and identify opportunities to reduce alarm processing time.
- Complete critical task analyses for common incident types in response SOGs as a component of completing the service delivery policy.
- Implement incident reporting procedures to record the time that apparatus leave the station, the number of firefighters on each apparatus, firefighters that respond directly to scene, and any firefighters remaining at the station.

Although each recommendation has a corresponding timeframe, it is important to note this FSMP needs to be revisited on a regular basis to confirm that the observations and recommendations remain relevant. The recommendations outlined in this FSMP will better position LBFS to mitigate and manage community risks, monitor response capabilities and performance, and maintain excellent community relationships and value for money.

Notwithstanding operational observations around alarm handling and processes, response records management, achievement of an effective response force and the need for core service delivery performance targets, the LBFS is an exemplary fire service that is serving the community very well.

Finally, our interactions with the Township of Lucan Biddulph elected officials and staff revealed a highly professional and dedicated organization that is committed to providing the best possible service to the citizens of the township.

SECTION 1
INTRODUCTION

1.1 Background and Significance

Community leaders across Canada continue to search for innovative approaches to improve the efficiency and effectiveness of fire and rescue service delivery. Community leaders and managers are often faced with the ongoing challenge of achieving efficient and effective service delivery models. Effectiveness refers to the ability to achieve the desired results or outcomes. Efficiency refers to optimizing the use of available resources – whether it is time, money, or effort. The notion of efficiency is service delivery can and has been, described as 'doing more for less' or 'value for money.'

Public safety is most often one of the top priorities within most communities, but achieving this goal comes at a relatively high cost. The services charged with achieving this outcome, including police, fire, EMS, and emergency management services, are essential components of any community's social safety net. Service effectiveness is not an option. However, the need for fiscal prudence and to review operational efficiency and effectiveness cannot be ignored. Senior community officials must continue to be vigilant in their search for innovative and sustainable practices and finding the balance between service levels and expenditures to ensure their citizens are getting 'value for money.'

1.2 Goals and Objectives

The goal of this project to develop a Fire Services Master Plan (FSMP) by conducting a comprehensive community risk assessment and a fire services review and produce a long-term strategic plan that spans up to 10 years. The FSMP provides a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

While risks are the basis for triggering response decisions, our analysis has also investigated the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community, businesses, and overall public safety. This plan also considers applicable legislation, industry-leading practices, and standards, along with current and anticipated risks to provide unbiased analysis and evidence-based recommendations.

Ultimately, this project has determined options towards an optimum service delivery model and serves as a blueprint for the community to be more effective and efficient in the delivery of fire and emergency services.

1.3 Project Scope

The Fire Services Master Plan will consider and achieve the following benefits:

- Enhanced firefighter safety
- Improved cost control and containment
- Increased efficiency and effectiveness
- Identification of the right sized service to meet the current and future needs of the community.

At minimum, we completed the following items:

1. Community Risk Assessment (CRA) addressing the nine (9) mandatory profiles outlined in Ontario Reg 378/18 to make informed decisions regarding the current service capabilities.
2. A review of all current fire services and programs, based upon the above risk assessment. Our analysis included an examination of the department's core functions, including, but not limited to:
    - Fire administration fire prevention, fire inspection, public education, training, fire suppression, apparatus, facilities, and emergency management.
    - How are services currently being provided and to identify areas needing improvement?
    - Fire station locations and apparatus deployment
    - Recruitment and retention of volunteer firefighters.

1.4 Standards and References

This plan considers the following references and standards:

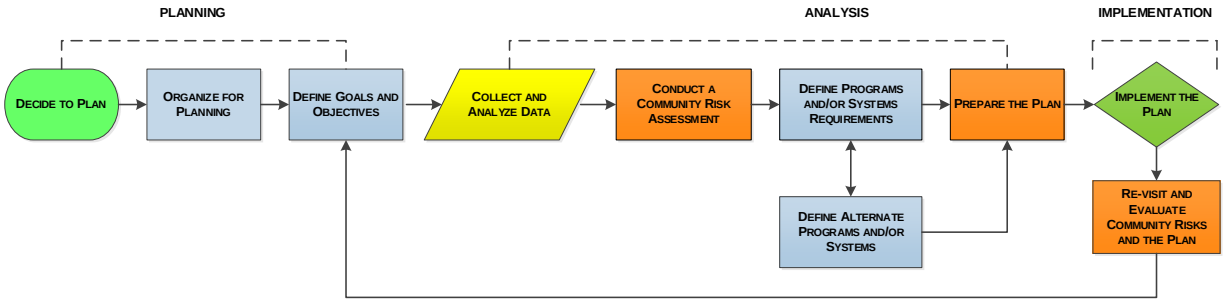
- Commission on Fire Accreditation International
- Canadian Standards Association (CSA)
- Fire Underwriters Survey (FUS)
- Ontario Emergency Management and Civil Protection
- Ontario Fire Protection and Prevention Act
    - O. Reg. 213/07: Ontario Fire Code
    - O. Reg. 378/18: Community Risk Assessments
    - O. Reg. 364/13: Mandatory Inspection – Fire Drill in Vulnerable Occupancy
    - O. Reg 365/13: Mandatory Assessment of Complaints and Requests for Approval
- Fire Marshal Directives
- National Fire Protection Association (NFPA)
- Ontario Occupational Health and Safety Act
- Ontario Building Code
- Underwriters Laboratories (UL/ULC)

1.5 Fire Services Master Plan Process

The following diagram illustrates the process used to complete this plan. A Fire Service Master Plan is sometimes referred to as a 'road map' to the future and used as a guiding document for current and future department leaders and decision makers.

As described in the 'implementation' phase, it is highly recommended that this plan be reviewed and evaluated, at minimum, on an annual basis or when there are unusual changes in risk, response demands, population and residential or industrial development activity. When reasonably possible, we also recommend a third-party update of the plan at the five-year mark to apply an unbiased review into the operation and provide further credibility to the master plan process.

Figure 1: Fire Services Master Plan Process



1.6 Consultative Process

1.6.1 Community and Fire Station Tour

The community and station tour focused on the overall footprint, topography, transportation infrastructure of the municipality and the various response zones for each of the two stations. Touring each station provided an opportunity to conduct a general condition and operational functionality assessment on each station.

1.6.2 Targeted Interviews

Targeted interviews were part of the data and information collection process. Participants were asked questions related to their areas of purview and expertise. An interview guide was used to conduct the interviews. The interview itself was used to promote an open discussion about the community, risks, general concerns related to the community and municipal operations.

Table 2: Targeted Interview List

No.	Name	Job Title
1	Cathy Burghardt-Jesson	Mayor
2	Ron Reymer	CAO/Clerk
3	Ron De Brouwer	Fire Chief (Lucan Biddulph)
4	Steve Toews	Fire Chief (Granton Station)
5	Tim Shipley	Deputy Chief
6	Mike Fletcher	Deputy Chief
7	Adam Froates	Training Officer
8	Dane Vandermolen	Training Officer
9	Brian Bates	Training Officer
10	Steve Guay	Chief Fire Prevention Fire Officer
11	Katherine Langendyk	Treasurer
12	David Goddard	Fire Board Member/Public

1.6.3 Online Firefighter Survey

To obtain balanced input, we also utilized an online firefighter survey. The online survey covered several topics including risk, operations, community growth and overall management of LBFS. The survey methodology offers several unique benefits. First, it offers an opportunity to gather opinions from an entire group as opposed to a limited sample of opinions from a select few. The online survey also offers an extremely flexible approach to the collection of data as respondents can complete the survey questions when it is convenient for them. Additionally, the anonymity of participants is relatively easy to control and therefore may yield more candid and valid responses. Finally, surveys are also extremely time and cost-efficient methods to engage large groups while capturing extensive data.

Invitations to participate in the survey were emailed to 39 potential participants; eighteen (46%) firefighters participated in the survey. Overall, 94% of respondents felt that the community receives adequate fire protection and felt the public is getting good value for their tax dollars. Of all respondents, 94% agreed that fire service demands will increase in the future. In general, respondents were positive with the level and amount of training received. A small percentage (11%) disagreed that the level of live-fire and speciality training was adequate.

Opinions regarding LBFS keeping pace with leading technology in records management, communications, online learning, and alerting were mixed. Between 10 and 15% disagreed that communications, records management, and mobile CAD systems kept pace with leading technology, while a large percentage neither agreed nor disagreed that the fire service has kept pace in these areas. Most however (72%) felt the fire service was adequately equipped with apparatus and small equipment, but 17% felt that the Lucan Station firehall was aging and not meeting the functional and operational needs of the fire service.

When asked, the top five perceived community risks were as follows:

1. Response time
2. New and high-density construction
3. Hydrant placement and water supply
4. Low-income areas and crime migrating from other areas.
5. No consensus. Answers include highways, community centre, weather, and aging trucks.

(See Appendix D Online Firefighter Survey for survey results).

1.6.4 Municipal Comparative Analysis

An industry peer comparative analysis[6] was conducted as a method of benchmarking the performance of departments to similar municipalities. These benchmarks include budgets, performance, effectiveness, and efficiencies. Although fire and emergency services ultimately have the same goal of protecting life and property, each community has its unique features in how to accomplish their goals. Our main criteria for the comparative analysis are indicators of effectiveness and efficiencies amongst the communities for risk and mitigation.

1.7 Study Considerations

The following factors that affected both the assessment and effective mitigation of risk were considered and assessed:

Community-Specific Considerations

- Total area of review
- Population and future growth
- Community risk factors
- Community demographic information
- Development and area structure plans
- Multi-jurisdictional requirements and cooperation
- Current and future development impact on risks and response
- Financial resources and constraints
- Impacts of government legislation
- Bylaws affecting the emergency services.
- Economic factors
- Tourism
- Construction
- Industrial activity
- Utilities

[6] *Please see Section 3.15, Municipal Comparative Analysis, Page 83*

- Retail businesses and other services
- Agriculture
- Buildings and structures concentrating on high-risk demands, including business, assembly occupancies, etc.
- Municipal emergency management plans

Department-Specific Considerations

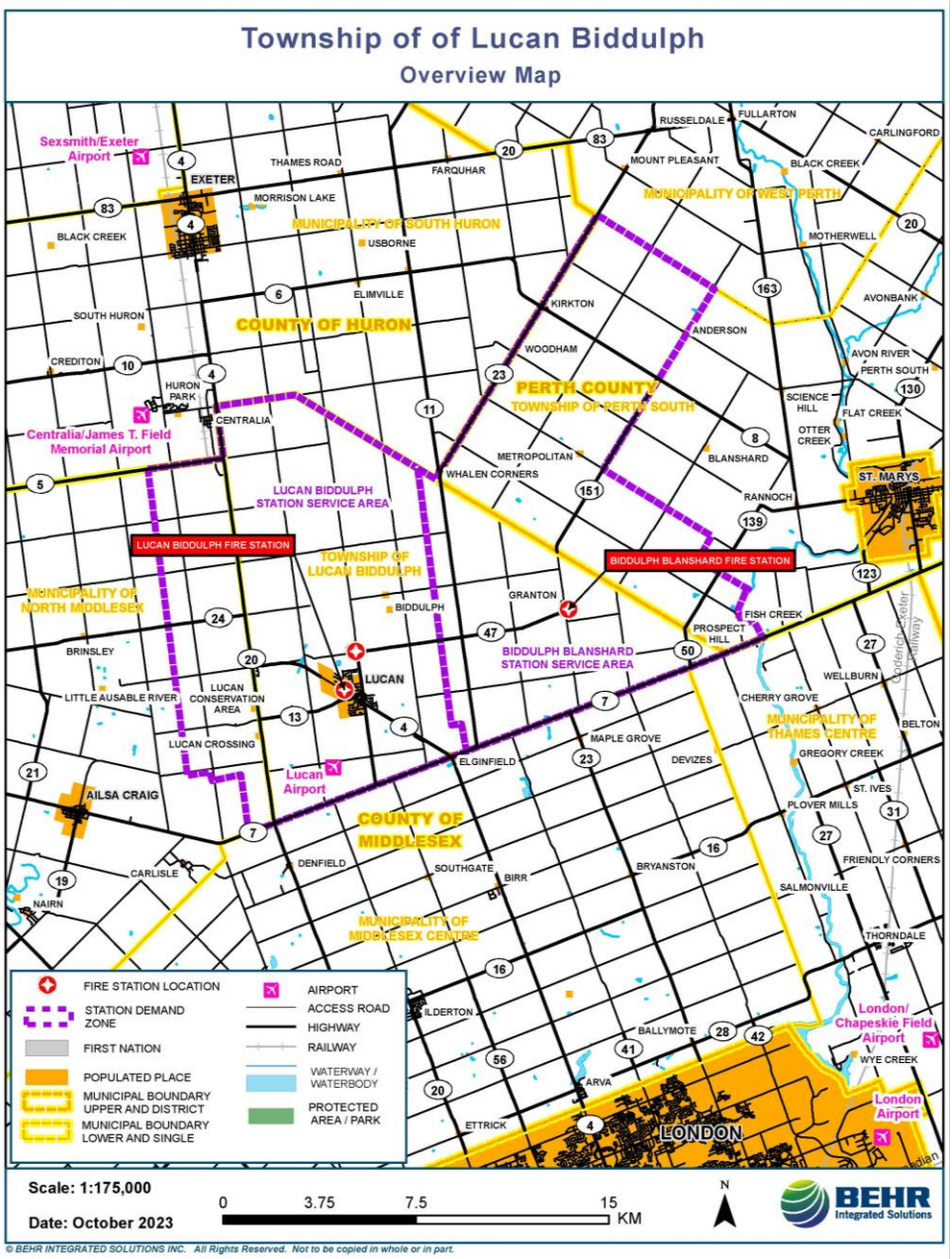
- Geographic and physical boundaries for response
- Fire service annual reports
- Fire service focused reports previously conducted.
- Standard of cover
- Budgets
- Current staff rosters with qualifications
- Fire station locations and other infrastructure
- Support services
- Department structure
- Service delivery models
- Apparatus and equipment inventory, and future needs
- Building space requirements
- Operation staffing and administrative needs
- Bylaw, policies, and procedures
- Reporting structure and requirements
- Fire prevention & public education
- Emergency core service response
- Health and wellness
- Training and recruitment records and standards
- Succession planning
- Prevention programs such as inspections, education, and enforcement
- Records and data management
- Emergency services standard operating guidelines and procedures

SECTION 2
COMMUNITY PROFILE AND RISK OVERVIEW

2.1 Community Overview

The Township of Lucan Biddulph is in southwestern Ontario nestled between the communities of Middlesex Centre, North Middlesex, Huron County and Perth County. Lucan Biddulph is situated less than 30 minutes from London, Grand Bend and Stratford and only two hours from Toronto. It has a land area of 169.14 km^2 (65.31 sq mi).

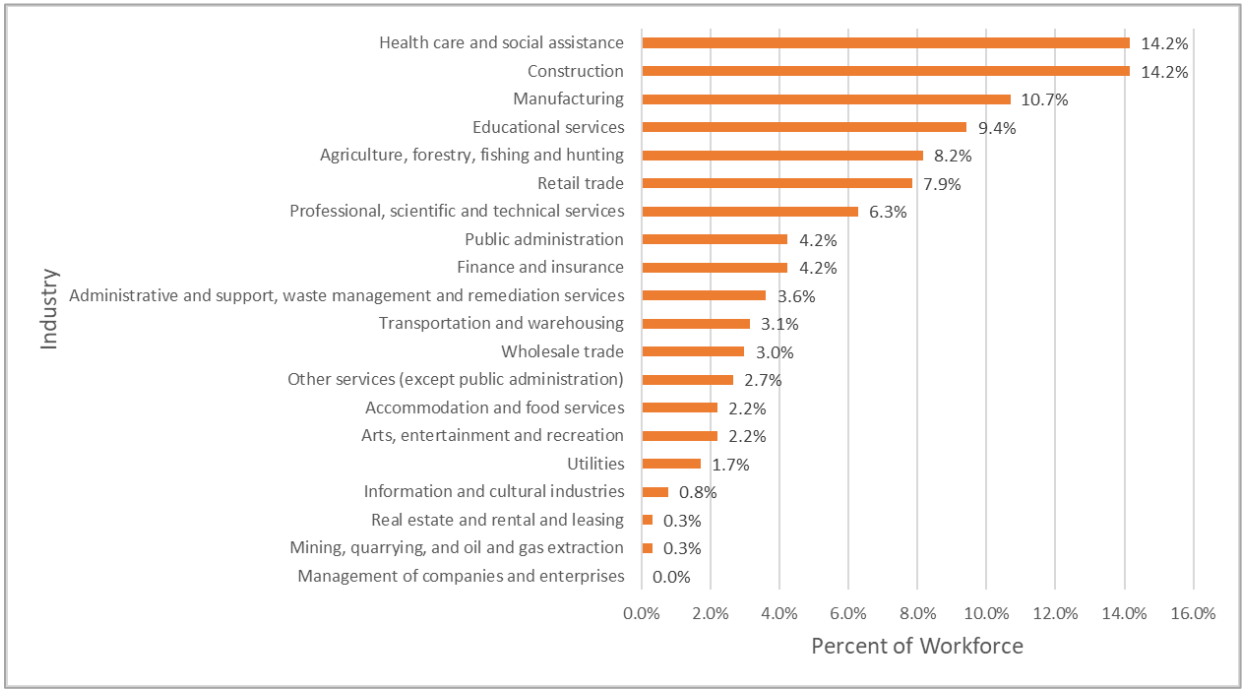
Map 1: Lucan Biddulph Overview Map



2.2 Economic Indicators

Lucan Biddulph is primarily an agriculture community and is also a popular bedroom community for the City of London. The top industry employers in Lucan Biddulph are summarized in Figure 2 below. Approximately 14.82% of the employed population works in health care and 24.9% work in construction and educational services.

Figure 2: Top Employment Industries for Lucan Biddulph



2.3 Growth Projections

Lucan Biddulph's has experienced considerable growth since 2006 with a notable increase between 2016 and 2021 of 20.9%. Table 3 shows that over the last 20 years, the number of total private dwellings has also changed considerably, with the highest increase occurring between 2016 and 2021 by 18.2%. This trend is seen in similar parts of Ontario, as affordability and availability for new developments outside cities is a popular and cost-effective choice for commuters.

Table 3: Population and Private Dwellings Change (2001 to 2021)[7]

Year	Population	% Change	Total Private Dwellings	% Change
2001	4,201	0.8	1,489	No Data
2006	4,187	- 0.3	1,556	4.5
2011	4,338	3.6	1,653	6.2
2016	4,700	8.3	1,837	11.1
2021	5,680	20.9	2,172	18.2

[7] *2021 Census of Population geographic summary: Lucan Biddulph, Township (TP) [Census subdivision], Ontario (statcan.gc.ca)*

2.4 Key Community Demographics

A core component of assessing risk factors is analysis of the community demographic. This analysis would also identify specific measures to mitigate risks associated with a specific age group. The 2021 census identifies a total population of 5,680 for the Township of Lucan Biddulph[8].

Table 4: Population by Age Group

Age	Lucan Biddulph Population	Lucan Biddulph Percentage of Population	Ontario Population	Ontario Percentage of Population
0 to 4 years	415	7.31%	683,515	4.81%
5 to 9 years	415	7.31%	764,430	5.37%
10 to 14 years	375	6.60%	803,850	5.65%
15 to 19 years	305	5.37%	801,455	5.63%
20 to 24 years	265	4.67%	895,600	6.30%
25 to 29 years	375	6.60%	975,400	6.86%
30 to 34 years	450	7.92%	981,210	6.90%
35 to 39 years	440	7.75%	948,030	6.67%
40 to 44 years	385	6.78%	890,160	6.26%
45 to 49 years	360	6.34%	894,580	6.29%
50 to 54 years	330	5.81%	941,270	6.62%
55 to 59 years	355	6.25%	1,040,160	7.31%
60 to 64 years	345	6.07%	966,575	6.80%
65 to 69 years	295	5.19%	813,215	5.72%
70 to 74 years	245	4.31%	691,280	4.86%
75 to 79 years	165	2.90%	469,485	3.30%
80 to 84 years	85	1.50%	325,110	2.29%
85 to 89 years	45	0.79%	205,480	1.44%
90 to 94 years	25	0.44%	101,430	0.71%
95 to 99 years	10	0.18%	28,000	0.20%
100 +	0	0.00%	3,705	0.03%
Total	5,680	100.00%	14,223,940	100.00%

[8] *Profile table, Census Profile, 2021 Census of Population - Lucan Biddulph, Township (TP) [Census subdivision], Ontario (statcan.gc.ca)*

Note: *Statistics Canada is committed to protect the privacy of all Canadians and the confidentiality of the data they provide to us. As part of this commitment, some population counts of geographic areas are adjusted to ensure confidentiality. The adjustment to counts of the total population for any dissemination block is controlled to ensure that the population counts for dissemination areas will always be within 5 of the actual values. The adjustment has no impact on the population counts of census divisions and large census subdivisions.*

Table 5: Average & Median Age

	Total	Male	Female
Average Age	38.5	37.7	39.3
Median Age	37.6	36.8	38.8

Table 6: Population Distribution

Age Range	Total	Male	Female
0 to 14 Years	1,205	620	585
15 to 64 Years	3,605	1,815	1,790
65+ Years	870	410	460

Table 7: Age Distribution in Percentages

Age Range	Total	Male	Female
0 to 14 Years	21.2%	21.8%	20.6%
15 to 64 Years	63.5%	63.9%	63.0%
65+ Years	15.3%	14.4%	16.2%

The youngest demographic (those 14 years of age and under) represents 21.2% of the township's total population, which is higher in comparison to the province (15.8%). While at a lower risk of fatality in residential occupancies overall when compared to seniors or adults, youth (aged 14 years and under) represent an important demographic for the purposes of public education. As a result, there is value in targeting public education and prevention programs to this demographic. Structured education programs consistently provided to children and youth can help to engrain fire and life safety awareness and knowledge into future generations.

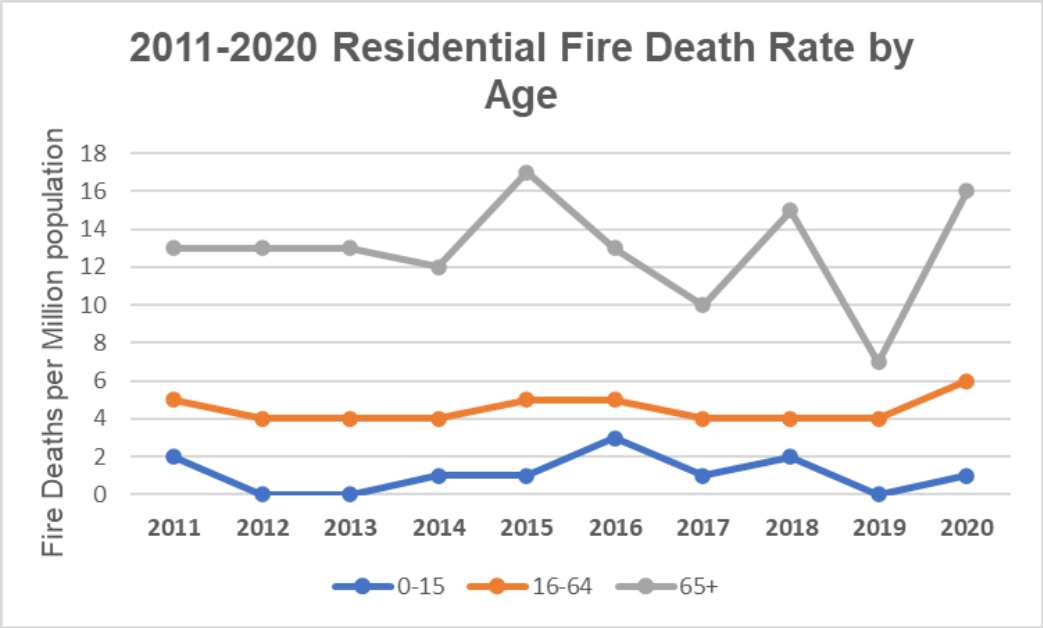
The percentage of the population aged 65 years and older represents 15.3% of the total population of the township, which is 3.2% lower than the province (18.5%). An additional 12.3% of the township's population falls between the age group of 55 and 64, who are ageing towards the senior demographic of 65 years of age and older. Based on historic residential fire fatality data, this population will become seniors who will be at greater risk. These demographic trends are important considerations for the development of informed targeted public education programs and risk reduction strategies within the community.

A community's population by age is an important factor in identifying specific measures to mitigate risks associated with a specific age group, such as seniors. Canada's aging population has been recognized as one of the most significant demographic trends. According to Statistics Canada, from 2016 to 2021 Canada experienced a significant increase in the proportion of seniors

since Confederation" due to the baby boomer generation reaching the age of 65. There are more Canadians over the age of 65 (18.54% of the population) than there are children aged 14 years and younger (15.83%).[9][1]

Seniors (those 65 years and over) are considered to represent one of the highest fire risk groups across the province based on residential fire death rate (fire deaths per million of population). Figure 3[10] illustrates the number of fire deaths in Ontario through 2020. Seniors are identified at an increased risk of fatality in residential occupancies when compared to other age groups.

Figure 3: 2011-2020 Residential Fire Death Rate by Age of Victim



2.5 Community Planning and Development

Most of the future growth in the Township of Lucan Biddulph will be directed to the Village of Lucan and secondly to the Village of Granton. Both villages are serviced by a municipal water supply and sanitary sewage systems with reserve capacity sufficient to accommodate additional growth.

In the County of Middlesex Official Plan, which under the Planning Act, Lucan Biddulph is required to conform, Lucan and Granton are the only centres in the Township of Lucan Biddulph designated as 'Settlement Areas.' Such areas are defined in the County Official Plan as areas where development is concentrated and contiguous and which have the potential to accommodate additional development.

Elsewhere, future residential development in the Township of Lucan Biddulph will be restricted, being directed to the hamlet of Clandeboye, limited locations along the Little Ausable River in

[10] *Office of the Fire Marshal and Emergency Management. (Revised 2018, November). Ontario Residential Fatal Fires. Retrieved from Ministry of the Solicitor General Website*

areas designated 'country residential' and existing 'lots of record.' One extensive area of existing vacant lots lies along the south side of Highway No. 4 in Lot 9 and Lot 10, S.L.R. at the end of Nagle Drive. Non-agriculturally related industrial and commercial development will be directed to Lucan and Granton and to a few key locations considered suited to this type of development.

The growth management strategy is designed to limit the loss of prime agricultural land, to enable farm operations the ability to expand and adapt to changing marketing conditions and technology, and to minimize the potential for conflicts between farming and rural residents. It is also designed to make efficient use of the capital investment in infrastructure by the Municipality and the Province, to strengthen the existing established communities in the Township and to limit the costs to the Municipality associated with 'sprawl' or random urbanization of the countryside.

2.6 Community Risk Assessment

Risk can be managed by either accepting the risk, insuring against damages, or investing in risk prevention and mitigation strategies. Local governments typically employ a combination of these approaches. In general, the risks and management strategies of a community are relative to a municipality's financial capacity, geography, population demographics, fixed assets, and critical infrastructure, as well as overall service delivery.

Conducting a risk assessment is the first step towards establishing a strategic plan to manage community risks based upon local fire department response capabilities. The results are used to assist the municipality in making informed decisions regarding the allocation of limited fire prevention and fire response resources.

Community Risk Assessments are required pursuant to Ontario Regulation 378/18 and allow fire departments to make informed decisions about the types and levels of fire protection services provided based on identified risks. Specifically, the following nine (9) profiles will be reviewed:

a. Geographic profile
b. Building stock profile
c. Critical infrastructure profile
d. Demographic profile
e. Hazard profile
f. Public safety response profile
g. Community services profile
h. Economic profile
i. Past loss and event history profile

The information and data gathered to address each of the profiles will assist in determining and prioritizing risks to public safety in the community and determining the fire protection services to be provided by municipalities to address those risks.

Risks were identified using historical response data, hazard risk vulnerability assessments and information from our interviews to develop a risk profile for the community. The evaluation of

fire and rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

The Community Risk Assessment (CRA) must consider the following:

- Format must be approved by the Ontario Fire Marshal by reviewing the nine mandatory profiles.
- The Technical Guideline TG-02-2019: Community Risk Assessment Guideline will be used as guidance in formatting the risk assessment.
- Utilization of the charts as provided in the technical guideline or as a minimum, all the points outlined in the guideline.
- The CRA document will be made readily available if the Ontario Fire Marshal conducts a review of the municipality under the FPPA(Part III, 9. (1)(a)).

2.6.1 Risk Management

All communities require a process to identify and actively manage high-priority risks. Image 1 describes the risk management cycle. The first step in the risk management process includes the assessment of the probability and consequence of specific risks. The second step is the assessment to identify key risks which are then evaluated against the current prevention or response strategy to identify potential service gaps. The third step in this cycle includes adjusting fire prevention and response service levels to manage the resources necessary to pre-emptively mitigate or respond as determined by approved service levels. The last step in the cycle is to measure and report results to key policy makers. This cycle should be repeated periodically to address changes in the risk profile and make thoughtful and informed decisions regarding strategies to manage any changes.

Image 1: Risk Management Cycle Process

In Canada, local governments are charged with delivering fire and rescue response services for their citizens. Elected officials are the 'authority having jurisdiction' (AHJ) who determines the level of service required to manage fire and rescue risks to an acceptable level. The challenge for elected officials lies in determining the best balance between investing in adequate emergency services and accepting a certain level of risk.

2.7 Risk Evaluation vs. Service Levels

The evaluation of fire or rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

Probability – The probability of a risk, or event type, is the determined likelihood that an event will occur within a given time. The probability is quantified by considering the frequency of event type data. An event that occurs daily is highly probable and therefore higher risk. An event that occurs only once in a century is assessed as a lower risk as it may never occur.

Consequence – There are three types of consequences when considering fire/rescue response requirements:

- Life safety impact: Life safety risk for victims and responding emergency personnel are the highest order of consequence when considering the risk associated with specific event types. Events with a high likelihood of injury/death occurring and even a moderate probability of occurring require close examination to ensure adequate resources required to safely rescue or protect the lives of occupants from life-threatening are accessible to respond. Incidents that risk life safety include motor vehicle accidents, extreme weather, flooding, fire, release of hazardous materials, medical emergencies, and all types of rescue situations.
- Economic impact: Events with high negative impact on the local economy are devastating to a municipality. For example, recovering from the fire loss of a large employer's property or key public infrastructure in smaller municipalities can be difficult. Therefore, providing adequate response capacity necessary to manage these types of events must be considered.
- Environmental impact: Negative environmental consequences resulting in irreversible or long-term damage to the environment must also be considered in the analysis. Events with risk of negatively impacting water, soil and air quality are also likely to impact life safety as well as the economy and therefore must be considered.

Social and cultural impacts as experienced with the loss of historic buildings, recreation facilities or non-critical community infrastructure, are considered but do not typically affect how fire department resources are deployed.

As discussed, the risk evaluation process is used to identify high-priority risks and the appropriate risk management strategy. Where a fire department response is determined to be the most appropriate management strategy, the appropriate services and service levels should be established to safely manage the risks. Elected officials are responsible for determining which services are delivered and setting service level goals. The service level goals determine the necessary concentration and distribution of either fire prevention or emergency response resources to safely manage the identified risks.

Distribution *refers to the number of fixed resources, such as fire stations, and where they are placed throughout the community. Distribution varies depending on factors related to the number of incidents and types of calls for service in the defined area.*

Concentration *refers to the assembling of resources, such as a specialized work force and equipment, needed to effectively respond to an incident in each area within the community. It must also identify the availability of additional response resources including the reliability and time of arrival of a secondary responding unit.*

The risk evaluation matrix described in Figure 4 is divided into four levels of risk based on the probability and consequence, each with specific implications for the concentration and distribution of resources. It is provided as a reference and context for use of the matrix to quantify fire response risks in your municipality. Different quadrants of the risk matrix need different response requirements.

Figure 4:Risk Evaluation Matrix

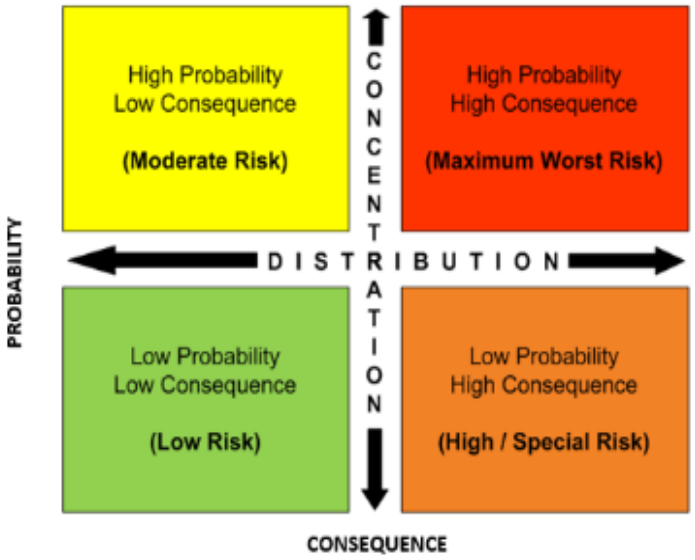


Table 8 offers examples of categories of types of structural fires and general hazards commonly found in communities. As described above, these risks are categorized by considering the probability and consequence of the fire or hazard. This qualitative analysis is based on experience and expertise, and should be completed with input from fire, building and emergency management officials. Every community will have a unique risk inventory contributing to its risk profile.

Table 8: Risk Inventory Example

Low Risk = Low Probability and Low Consequence

This category is limited to areas or incidents having a low probability of fire risk and low consequence for the potential for loss of life or economic loss. Some low risks include:

- Outdoor fire pits
- Non-structure lightning strikes
- Vacant land
- Parks without structures
- Isolated structures such as sheds

Moderate Risk = High Probability and Low Consequence

Most responses fall under this category. Moderate risks include:

- Motor vehicle collisions
- Carbon monoxide detection (emergency medical co-response)
- Monitoring/local alarms
- Vehicle fires
- Dangerous goods incidents with small quantities of a known product (20 litres or less), outdoor odours (natural gas or unknown)
- Miscellaneous explosions
- Emergency standbys
- Smoke
- Odours
- Fires:
  - garbage
  - detached garages
  - single or multi-family residential fires
  - small non-residential buildings less than 600 square metres

High Risk = Low Probability and High Consequence

There are very few properties/responses that are considered high probability, high consequence. These properties are categorized as large properties, over 600 square metres, without adequate built-in fire protection systems, or that has large concentrations of people or has a significant impact on the local economy. High risks include:

- Commercial, industrial warehouse
- Dangerous goods incidents with large quantities of known products (75 litres or more), unknown products or large exposure
- Hospitals, care homes, institutions
- Derailments & transportation of dangerous goods
- Aircraft crashes on or off the airport
- Bulk fuel storage facility fire/explosion

Maximum Risk = High Probability and High Consequence

This category of risk can be generally categorized as properties over 600 square metres that have high economic value in the form of employment or are not easily replaceable, or natural disasters occurring in highly populated areas, creating high life and property loss potential and strains on the department and other agency resources. Damage to properties in this category could result in temporary job loss or permanent closure of the business. Such properties are highly regulated or possess built-in fire protection systems. Some maximum risks include:

- Wildland fires
- Weather related events (floods, tornadoes, serve storms etc.)
- Large vehicle accidents, pileups, derailments
- Quantities of known flammable products (500-1000 litres)
- Explosions or substation electrical fires
- Confirmed natural gas leak

2.7.1 Assigning Risk Level

Once probability and consequence are determined, the level of risk is calculated by multiplying the numerical values for probability and consequence. The relationship between probability and consequence as it pertains to risk levels can be illustrated in a risk matrix (below). In a risk matrix, probability and consequence are defined on separate scales with varying descriptors providing direction on how to assign the probability and consequence of an event. Figure 5 shows the risk matrix from the CRA appended to this report. The purpose of assigning a risk level is to assist in the prioritization of the range of risks that are identified in the CRA.

Figure 5: Risk Matrix Template

PROBABILITY						
	Almost Certain 10,000	Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk
	Likely 1,000	Moderate Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
	Possible 100	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	High Risk
	Unlikely 10	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
	Rare 1	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk
		Insignificant 1	Minor 10	Moderate 100	Major 1,000	Catastrophic 10,000

CONSEQUENCE

Where possible, quantitative data was used to inform the risk assignment as described in the rationale in the table. It is important to recognize that with the availability of new or updated data, the probability levels could change or be refined. It should also be recognized that, as identified in. OFM T.G.-02-2019, "professional judgment based on experience should also be exercised in combination with historical information to estimate probability levels. Similarly, OFM T.G.-02-2019 acknowledges the role of professional judgment and reviews of past occurrences in determining consequence levels. The rationale provided for both probability and consequence consider information from the nine profiles of the CRA, as OFM T.G.-02-2019 supports consideration of the profiles together to inform decision-making about the provision of fire protection services in the specific municipality/community.

2.8 Structural Fire Risk Analysis

It is critical to use careful planning and consider alternative solutions when managing risk because the ability to increase the distribution of resources and add capacity is always limited. Spending substantial amounts of time and resources to manage a risk with low frequency/low consequences will have limited impact and make a minimal improvement to community safety. When planning for fire department response, the planning process includes a detailed review of the frequency of events and their potential consequence(s) to ensure prevention and response efforts maximize life safety and minimize negative consequences for high-priority events.

The Office of the Fire Marshal (OFM) have developed guidelines to assist municipalities with conducting community risk assessments to inform decisions about the provision of fire protection services, in accordance with Ontario Regulation 378/18 and the Fire Protection Act 1997 (FPPA).

As referenced in O. Reg. 378/18, the building stock profile assessment includes analysis of the types and uses of building stock of a municipality. Important considerations include the number of buildings of each type, the number of buildings of each use and any building related risks known to the fire department. There are potential fire risks associated with different types and uses of buildings given the presence or absence of fire safety systems and equipment at time of construction and maintenance thereafter. This section considers these building characteristics within the municipality.

2.9 Ontario Building Code Occupancy Classifications

2.9.1 Building Stock Profile

The Ontario Building Code (OBC) categorizes buildings by their major occupancy classifications. Each classification has definitions that distinguish it from other occupancy classifications. Using the OBC as the source for defining the occupancy classifications provides a recognized definition and baseline for developing the community risk profile. The OBC major classification groups and divisions are presented in Table 9 below.

Table 9: OBC Major Occupancy Classification:

Group	Division	Description
A	1	Assembly occupancies intended for the production and viewing of the performing arts
A	2	Assembly occupancies not elsewhere classified in Group A
A	3	Assembly occupancies of the arena type
A	4	Assembly occupancies in which occupants gather in the open air
B	1	Detention occupancies
B	2	Care and treatment occupancies
B	3	Care occupancies
C	--	Residential occupancies
D	--	Business and personal services occupancies
E	--	Mercantile occupancies
F	1	High hazard industrial occupancies
F	2	Medium hazard industrial occupancies
F	3	Low hazard industrial occupancies

2.10 OFM Fire Risk Sub-Model Occupancy Classifications

The Fire Risk Sub-model developed by the OFM utilizes the major building occupancy classifications (i.e., Group A, B, C, D, E and F), but does not use the detailed division classifications as included in the OBC. This strategy provides the opportunity for further analysis of a specific occupancy group. Subject to any site-specific hazards or concerns, occupancies within a group can be assessed individually and then included where required within the scope of the broader community risk assessment.

Analyzing structural fire risk begins by developing an exhaustive inventory of existing building stock and monitoring changes to the inventory. This process should include staff from the planning and development departments, as well as building and fire prevention officers. This provides the fire service with an opportunity to evaluate the Ontario Fire Code requirements in the design, construction, and operation phases of the building.

The building inventory database becomes the foundation of assessing fire risk in the community. This inventory provides a count of all property types including single and multi-family residential, assembly (including schools, churches, hospitals, personal care homes, etc.), mercantile, commercial, and industrial properties.

Once the inventory is assembled, fire department response capability is measured against the identified property risks. This simple identification of the high numbers of specific high-risk property types may identify gaps in the current response model, resulting in the reorganization or addition of fire department resources. As building stocks increase, fire departments should continue to monitor response capability and capacity to ensure service levels are maintained.

2.11 Township of Lucan Biddulph Existing Major Building Classifications Summary

Analysis of township's major building occupancy types was conducted using data provided by the Municipal Property Assessment Corporation (MPAC) and the 2021 census. Table 10 summarizes the township's existing major building occupancy classifications.

The majority of the township's existing property stock is comprised of Group C - Residential Occupancies (83.97%). The second largest occupancy type within the township is Other (farm) 12.65% of the township's property stock (555 farm buildings).

Table 10: Township of Lucan Biddulph Total Existing Property Stock[11]

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	Number of Occupancies	Percentage of Occupancies
Group A	Assembly Occupancies	23	
Group B	Care or Detention Occupancies	2	0.05%
Group C	Residential Occupancies - Total	2,007	45.76%
Group C	Single Family	1,668	38.03%
Group C	Multi-unit Residential	5 (270 dwellings)	0.11%
Group C	Hotel / Motel	0	0.00%
Group C	Mobile Homes / Trailers	3	0.07%
Groups D & E	Commercial	81	1.85%
Group F (all Divisions combined)	Industrial Occupancies	38	0.87%
Other	Not classified in Ontario Building Code - Farm	555	12.65%
Other	Not classified in Ontario Building Code - Government	4	0.09%
	Total Occupancy Classification	4,386	100.00%

Consistent with most other municipalities in Canada, Group C - Residential Occupancies represent the most prominent type of building occupancy type within the township. Within Ontario, information provided by the OFM indicates that the majority of structure fires loss over the five-year period from January 1, 2018, to December 31, 2022, occurred within Group C - Residential Occupancies (67%). It is also important to note that 93% of the civilian fire related injuries, 100% of the civilian fire related fatalities and 74% of the dollar loss also occurred in residential occupancies.

[11] *Township of Lucan Biddulph 2022 MPAC Municipal Change Profile*

2.12 Occupancies with Potential High-Fire Life Safety Risk

Occupancies with a potential high-fire life safety risk are those where occupants may require evacuation support, have mobility issues, or require specialized medical equipment. Examples of occupancies of this type include medical facilities and hospitals, nursing homes, and assisted living homes. The township has one high fire life safety risk occupancy: Jake's House Community Residences. Furthermore, from the perspective of risk, it can be valuable for a fire department to identify additional potential high fire life-safety risk considerations. This includes day care facilities and schools. Children, due to age and potential cognitive or physical limitations may prevent or delay self-evacuation in the event of an emergency. For the purposes of this CRA, potential high life-safety risk occupancy considerations include schools and licensed day care facilities. Analysis of Municipal Property Assessment Corporation Data identified that there are two schools in the township: the Thames Valley District School Board (TVDSB) and St. Patrick's School in the London & District Catholic School Board (LDCSB).

It would be beneficial for LBFS to conduct pre-planning activities for all occupancies with vulnerable occupants. Pre-planning activities increase fire department personnel familiarity with buildings of special interest. A fire department can help reduce the risk faced by vulnerable individuals or vulnerable occupancies by performing regularly scheduled fire safety inspections; approving and witnessing fire drill scenarios; providing public education on fire safety issues; conducting pre-planning exercises to increase fire department personnel's familiarity with the facility; reviewing fire safety plans for accuracy and encouraging facility owners to update facilities as needed; providing staff training; and encouraging fire drills.

2.13 Community Risk Analysis Overview

Every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. Some examples of challenges that may impact community risks include:

- Fire/rescue service model and response capacity
- Population and demographics
- Population growth rate
- Industry types
- Economy
- Rate of development
- Transportation corridor types
- Typography
- Weather
- Historical response data

The evaluation of fire or rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current,

and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

The township's Hazard Identification and Risk Assessment (HIRA) was reviewed and updated in December 2020 indicating that the township has complied with its legislative requirements, however the HIRA should be re-visited to ensure accuracy. As a component of the risk assessment and risk analysis process, the top risks in Lucan Biddulph were identified. The HIRA assigned likelihood and consequence levels to a list of hazards based on the potential for impacts to people, property, and the environment. As a result of this analysis, the top hazards in the township include the following:

- Hazardous materials incident
- Air transportation incident
- Pandemic/epidemic
- Cyber attack
- Petroleum emergency
- Severe weather (tornado, wind)
- Snowstorm
- Extended power outage

2.14 Impacts of Hazards on Fire Protection Services

In addition to the overall highest risks to the community, certain events pose an increased risk specific to firefighting. To better understand the risks of hazards as they pertain to fire protection services, the hazards have been assessed within the community risk assessment to identify possible impacts on fire protection services. Many of the potential impacts are not unique to a jurisdiction. The results of this review as they pertain to the top hazards in the township the same as listed above.

In addition to the overall highest risks to the community, certain events pose an increased risk specific to firefighting. The risk to firefighting responders to the most hazardous events are identified below, as well as the most hazardous events they may encounter that pose a specific risk to them and their ability to respond, in particular:

- Snowstorms/hail/freezing rain
- Hazardous materials release/spill/fire
- Critical infrastructure failure
- Motor vehicle incident
- Industrial fire
- Dust explosion
- Swift water rescue

Table 11: Impacts of Hazards on Fire Protection Services

Hazard	Possible Impact
HAZMAT spill – fixed site	Between 2018 and 2021 there were 2,504 reportable hazardous materials spills in water and on land in Ontario (predominantly of low or no impact). **Overall Impact (from HIRA)** Serious injury or fatality. Possible secondary emergencies such as fire or explosion when chemicals mixed with air, water, or other agents. Could require small- or large-scale evacuation of homes, businesses, school etc. **Fire Services** Depending on the severity and type of release, could pose secondary risk to firefighters on-scene. Must have proper knowledge of chemical release. May not be able to access the scene until proper back-up arrives or have proper information.
Air Transportation Incident	Between 2018 and 2021 there were more than 95 aircraft incidents in Ontario. **Overall Impact (from HIRA)** Serious injury or fatality. Potential impact to critical infrastructure such as roadways and power. **Fire Services** Depending on the severity and type incident, could pose secondary risk to firefighters on-scene of fire and or explosion. Not jurisdiction of fire department.
Human Health Emergency (Pandemic)	The 2020 COVID 19 Pandemic implications are still having a negative impact on communities. **Overall Impact (from HIRA)** Medically vulnerable persons are at risk. Increased use of non-recyclable PPE for staff. Critical infrastructure must be maintained with planning for staffing and acquisition of critical supplies. **Fire Services** Epidemic or pandemic breakout can present significant challenges to first responders causing potential fire department workplace absenteeism, and an increased demand for medical response and supplies as was illustrated during COVID 19. PPE was severely limited and supply chain issues for all equipment impacted operations. In many cases planned programming related to inspections and public education had to be delayed or modified.
Cyber Attack	The number and severity of cyber attacks continues to grow annually. **Overall Impact (from HIRA)** Privacy/data breach of public and/or municipality. **Fire Services** Breaches to major infrastructure could result in injury or fatalities. Breaches to databases could impede dispatch, record keeping and investigations. Breaches could result in financial loss.

Hazard	Possible Impact
Petroleum/Gas Emergency	Gas leaks in houses and buildings have caused fire, explosions, and fatalities. **Overall Impact (from HIRA)** Threat to public safety and utility disruption. **Fire Services** Pose secondary threat of fire or explosion to responders.
Wind/Storm/Tornado	A tornado was confirmed north of Lucan in 2020. **Overall Impact (from HIRA)** Above ground power lines, toppled trees could impact buildings or roads and winds could take down communication towers. **Fire Services** Depending on the severity of the debris on roads and downed power lines, access to various sections of the road network could be limited to fire department response delaying emergency response times. Interruptions to communication towers could impact fire department communications.
Winter Weather	Large ice storm in Ontario in 1998, several days with freezing rain in 2023. **Overall Impact (from HIRA)** Above ground power lines could be impacted along with road treatments, debris clearing, salt gravel or other road treatment supplies. **Fire Services** Depending on the severity of the debris on roads and downed power lines, access to various sections of the road network could be limited to fire department response delaying emergency response times. Interruptions to communication towers could impact fire department communications.
Snowstorm	A record of 177 cm of snow fell in 2010. **Overall Impact (from HIRA)** Visibility can cause traffic accidents on roadways or prevent movement of goods and services. Extended periods of no public service. **Fire Services** The number and severity of motor vehicle collisions will increase. This could include hazardous material response. Access to various sections of the road network could be limited to fire department response delaying emergency response times.
Extended Power Outage	Extended power outages in Ontario have occurred following severe weather (mostly in the winter). Power outages may also occur in summer months with an increased demand. **Overall Impact (from HIRA)** Impact to all residence and in particular farm operations. **Fire Services** Power outages may increase medical calls, lack of heat or cooling. Disruption to communications. Disruption to critical infrastructure such as traffic lights. Disruption to purchases such as fuel.

2.14.1 Fire Station Response Demand Zone

One of the challenges for LBFS and the township is to provide fire, rescue, and first medical response services from two fire separate and distinct fire stations with demand zones that include urban, rural, and remote areas. This includes a contracted area within the Granton area response zone.

Based on these different characteristics, it is reasonable to consider providing different fire and rescue services, as well as service levels, to manage the unique risks found in the varying demand zones. The structural fire risks along with the differing hazards within each demand zone should be analyzed using the risk matrix methodology. This process should identify high, extreme, and unique risks in these demand zones. As a result, the types and service levels necessary to manage these risks may differ across the demand zones within the municipality.

Identified service concerns or policy gaps should be discussed with council and policy should clearly reflect the services and service levels provided by LBFS. Further, the service delivery policy should consider the unique risk factors in each of the demands zones and the availability of firefighting water supplies.

To be successful, this process requires the support of all levels of senior township's leadership and council, as well as adequate resourcing within the fire service area.

Observation #1: A service delivery policy identifies high and extreme risks in a community and measures the current performance of the fire service to ensure these risks are managed safely. The township currently does not have a service delivery policy that is approved by Council. This policy is used to define core services, service levels and outline performance reporting requirements. Where service gaps are identified, the analysis of the unique and common risks in specific demand zones provide elected officials with the information required to make informed service level decisions. This information can be used to identify performance reporting requirements. Appropriate levels of performance reports can be shared with key stakeholders and inform the public.

The information gathered in the service delivery policy process can be shared both at the senior administrative and elected official levels. This can facilitate a purposeful and informed decision-making framework for both these groups of officials regarding the need for specific services, setting service levels, allocating funding, and establishing performance goals for LBFS.

Once completed, a service delivery policy may be shared with the public to provide clarity with respect to services provided and service level expectations. The information/data contained in the community risk assessment is foundational in the development of the SOC policy

Recommendation #1: Develop a service delivery policy for all demand zones within the township and contracted areas that includes the analysis and risk factors identified in the community risk assessment.

(Suggested completion: 48-60 months)

Rationale: *A service delivery policy offers several benefits to the operation and governance of LBFS. A comprehensive risk analysis completed at the level of individual demand zones would identify all high, extreme, and unique risks within the different demand zones. It also involves a complete review of existing services and service levels, standard operating guidelines and policies, a review of fire department resource distribution and concentration based on risk factors, and fire department performance measurement and reporting.*

After completing this review, the results should be compiled into a single document and presented to council.

2.15 Water Infrastructure

The Township of Lucan Biddulph and surrounding area are serviced by a system of water mains connected to a pumping station west of the Village of Lucan. The station receives its water supply from the Lake Huron Water Supply System.

Alternate water supply sources can include fire services access to ponds, streams other water supplies, and the use of fire suppression apparatus that have portable tanks that can support a tanker shuttle and a continuous supply of water to support fire suppression activities. According to the Fire Underwriter's Survey, an Accredited Superior Tanker Shuttle Service is a recognized equivalent to a municipal fire hydrant protection system if it meets all the requirements for accreditation. In areas without municipal water supply, a fire service should consider a water servicing strategy or formal plan for those areas requiring water flow for firefighting.

Observation #2: It was identified in the 2018 Asset Management Plan that several upgrades to the Lucan Booster Pumping Station (approved for 2019) and water network system were needed to meet current demand and fire flow requirements. Projects were estimated to commence in 2019, with the bulk of upgrades to begin in 2030 (or earlier) and be completed by 2033[12]**.**

Recommendation #2: The township upgrade the water main system to meet demand and fire flow requirements and establish a firefighting water plan that includes alternative sources or a superior tanker shuttle service.

(Suggested completion 36-48 months)

Rationale: *Water supply is a critical infrastructure/service that is essential for firefighting. Having access to the township's water delivery systems and sources is critical to service delivery.*

[12] *Township of Lucan Biddulph Asset Management Plan 2018*

SECTION 3
DEPARTMENT PROFILE

3.1 Department Overview

The current Lucan Biddulph Fire Services (LBFS) consists of two separate services with trained volunteer firefighters serving out of two fire separate and distinct fire stations, including the Lucan Station and the Granton Station. They provide fire, rescue, and medical first response services to the township of Lucan Biddulph and a defined response area in the Township of Perth South.

The Lucan fire station is led and managed by a fire chief along with a volunteer deputy chief. The roster consists of 24 volunteer firefighters including three captains, one training officer and one designated fire prevention/training officer. An additional fire prevention officer is currently being utilized on a contractual basis. The Lucan fire station has recently moved from four squads to three to provide the necessary response capacity to their fire protection demand zone. Each squad is led by a volunteer captain with firefighters assigned to each.

The Granton fire station is led and managed by a fire chief along with a volunteer deputy chief. The fire station roster consists of 24 volunteer firefighters including four captains, four training officers and one designated fire prevention/training officer. An additional fire prevention officer is currently being employed on a contractual basis. The Granton station has four squads to provide the necessary response capacity to their fire protection demand zone. Each squad is led by a captain with firefighters assigned to each.

The lines of accountability for these two distinct services are through their fire chief to a separate Fire Area Board and to municipal council. Each Fire Area Board is chosen by their respective Councils. The Lucan Biddulph Fire Area Board is comprised of two members of Council and one member-at-large from the public. The Biddulph Blanshard Fire Area Board has representation from two Councillors from both the Township of Perth South and Lucan Biddulph Township as well as one member-Isaac at-large from either township. On November 6, 2001, the Council of the Corporation of the Township of Lucan Biddulph repealed By-laws 11-76 and 12-95 and replaced them with By-law #67-2001 Establishing By-law.

Observation #3: The Township of Lucan Biddulph's By-law #67-2001 Establishing By-law; "A by-law to Establish and Regulate a Fire Department" is more 22 years old. Provisions within this bylaw such as department composition including the Granton Station, fire prevention programs, and firefighter training are not identified in this bylaw. This observation has direct implications for the service policy, service levels response matrix, critical tasks, and staffing levels recommendations contained in this report.

Recommendation #3: Conduct a complete revision and update of the establishing by-law.

(Suggested completion: 24-36 months))

Rationale: *While not a regulation, municipal by-laws should be reviewed and updated on a recurring basis with a suggestion of every five years as a leading practice. Aspects such as the governance structure, fire prevention and training programs, service policy, and formalized core services should be considered in this review.*

Lucan Biddulph Fire Services can request or be requested for additional fire/rescue resources with partners within the Middlesex County and Perth South through mutual and automatic aid agreements. Resources may also be requested through the OFM where necessary. The Granton Station is jointly owned and funded through Lucan Biddulph and Perth County to which emergency services is being provided to a defined fire area within Perth South.

Observation #4: The agreement between Lucan Biddulph and Perth South to create the Biddulph Blanshard Fire Department aligns with all provincial legislation. The contract was last revised in 2011 and may require review and update, to ensure currency. Under this agreement, clause 8 requires the fire equipment to be in a fire station in the community of Granton and ensure that the equipment is available to the township of Perth South. This would require further discussions with the fire board and Perth South should there be consideration to relocate a station outside of Granton.

The agreement also allows for either municipality to withdraw prior to the end of the term. It requires notice with a transition period of January 2nd in the 2nd year after notice provided. Withdrawing from said agreement would also require the municipality to pay all liabilities of the Fire Board, which could include severance of any paid employees and would require the withdrawing municipality to pay its percentage share of assets. Should Lucan Biddulph wish to terminate the contract, they would be required to pay out 50% costs for any station, vehicles, and equipment to Perth South.

Recommendation #4a: The Township of Lucan Biddulph to start discussions with Perth South to explore termination of the Biddulph Blanshard Fire Department and Fire Board, which should include the value of assets and any liabilities the Fire Board has responsibilities for.

(Suggested completion 1-24 months)

Recommendation #4b: The Township of Lucan Biddulph explores opportunities to further provide fire protection services to areas in Perth South currently covered by the joint Fire Board, through a fire protection 'fee-for-service' agreement.

(Suggested completion 1-24 months)

Rationale: *To restructure the operations and administration of fire services in the township under one organization, the township would require the termination of the agreement with Perth South and the dissolving of the Fire Board*

The current agreement is a long-standing practice and requires full understanding the actual assets and their values assigned to Biddulph Blanshard. It will require 13-24 months to complete any termination as identified under the contract, thus the earlier the discussion begin the sooner the understanding and impacts to any such termination.

Observation #5: The LBFS is functioning remarkably well with no evidence of significant turnover. In fact, there is a waiting list to join either service. Furthermore, the response analysis at Section 4 indicates that the total response time 80th percentiles are within leading practices. Both the Lucan and Granton stations maintain a positive and professional interaction between them which is an indication of both fire chiefs' leadership.

Notwithstanding operational observations around alarm handling and processes, response records management, achievement of an effective response force and the need for core service delivery performance targets, the LBFS is an exemplary fire service that is serving the community very well. However, maintaining two separate fire services in a township of approximately 5000 people is not a contemporary service structure. The current administrative and governance level of maintaining two separate fire services within the one township results in duplication, authority having jurisdiction complexities, inconsistencies, and reduced interoperability between the two services.

For example, there are different fire board governance structures, separate compensation processes for the volunteers, duplicate operational and capital budget processes, duplicate agreements for medical co-response, separate operational guidelines, and separate training programs and services. While there several complexities such as the inter-municipal bylaw with Perth South, disposition of shared capital assets, perceptions around loss of autonomy, identity and community affiliation, and public reaction, the LBFS should be a fully integrated single cohesive fire service.

There are several options to achieve this, and regardless which structure is preferred it will require an incremental approach of up to 5 years with extensive consultation, communication and engagement with the volunteer firefighters, fire boards, councils from Lucan Biddulph and Perth South and the public. Integration of administrative and governance processes along with the emergency response operations, firefighter training, fire prevention and public education programs should yield some cost savings. A complete financial analysis will be required as part of any integration initiative other than status-quo.

Recommendation #5: Initiate the integration of the Lucan Biddulph Fire Service into a single unified service.

(Suggested completion: (1 – 60 months)

Rationale: *Should the decision be to undertake the integration of the LBFS, the recommended approach would be to commence discussions with the fire chiefs and firefighters at the operational level to establish the core services and the recommend service delivery policy. Explore opportunities for joint training and fire prevention programs and engage in consultations around a single cohesive service. Administrative, financial, and governance changes can be initiated when the operational integration has been completed. In our opinion, the preferred option is full integration undertaken by incremental steps with comprehensive consultation, communication, and engagement over a 1–5-year timeline.*

The outcome would be streamlined administrative, financial, and governance processes and the transformation of the Lucan Biddulph Fire Service into a cohesive team that fully supports working together to improve service delivery and public safety

Table 12: Administrative and Governance Options

Option	Details	Advantages	Disadvantages
Status-quo	- Two Fire Boards as 1st level governance with Township as AHJ - Separate services under two fire chiefs - Duplicate emergency response operations, firefighter training, fire prevention and public education programs	- At present working well - No cost increases	- Duplication, authority having jurisdiction complexities, inconsistencies, and reduced interoperability between the two services. - Different fire board governance structures, separate compensation processes for the volunteers, duplicate operational and capital budget processes, duplicate agreements for medical co-response, separate operational guidelines, and separate training programs and services. - Increase administrative costs
Full integration (Recommended Option)	- Dissolve fire boards. Regional fire chief with one district chief. Lines of accountability to CAO with Council as AHJ - Rescind inter-municipal bylaw with Perth South. - Fee for service agreement with Perth South	- Streamlines and clarifies lines of accountability. Reduces duplication of services and costs. Consistencies for administrative and operational processes. - Enhances operational effectiveness and interoperability.	- Disposition of shared capital assets - Need to develop new fee for service agreement with Perth South - Potential for perceptions around loss of autonomy, identity and community affiliation, and political and public reaction and resistance
Partial Integration	- Two response districts with a single fire chief and one district chief - Biddulph Blanshard Fire Area Board established as standing committee of Council to oversee the Perth South and Granton fire protection districts. - Integration of administrative and financial management - Operational integration of both services	- Streamlines and clarifies lines of accountability. Reduces duplication of services and costs. Consistencies for administrative and operational processes. - Retains current inter-municipal bylaw with Perth South - Enhances operational effectiveness and interoperability. - Reduces potential for perceptions around loss of autonomy, and community affiliation, and political and public.	- Some residual duplication, and authority having jurisdiction complexities, - Potential for perceptions around loss of autonomy, identity and community affiliation, and political and public reaction and resistance

Modern fire departments have evolved into a critical component of a community's social safety net. Whereas early fire departments were established specifically to combat structure fires that, at the time, were often devastating. Today, fire departments are also called upon to respond to medical emergencies, technical rescues, and dangerous goods releases, often working together with other response agencies. As a result, fire departments must be properly structured, adequately resourced and equipped to deliver these services safely and competently.

The anticipated growth in development and population in certain areas of the township will challenge the fire service to maintain the current level of service going forward. It is desirable to ensure current services and infrastructure are in step with future development. In the case of a fire service, the lead-time to have stations, staffing and equipment in place at the appropriate time is validating the need to develop a fire service master plan that is aligned with the Lucan Biddulph development plan and council priorities.

While volunteer fire departments have a long-valued service history with their respective communities throughout North America, there may be a point that necessitates a transition toward a hybrid full-time/volunteer staffing model, typically referred to as a composite delivery model. Lucan Biddulph has not moved in that direction however may be required at some point because of increasing call volume, incident complexity and resource demand in certain areas of the Township. The response performance analysis at Section 4 does not support the requirement to move towards a composite staffing model.

3.1.1. Mission, Vision, and Values

A mission statement declares concisely the purpose of an organization, why it exists and how it provides service. A vision statement offers insight into where the organization strives to be in the future. Values are a list of guiding principals that guide and direct the organization and its culture.

Lucan Biddulph Mission Statement

Every strategic and operational decision needs to align with the organization's Mission. To provide residents, businesses, and visitors with strong municipal leadership, quality services, and support that are relevant and future-orientated, and in doing so, support the community's sense of place and ongoing volunteerism.

Lucan Biddulph Vision Statement

Lucan Biddulph will be a prosperous and growing community with a strong character and identity that is supported by an active Council, administration, and volunteer sector.

Lucan Biddulph Core Values

- *Accountability*
- *Transparency*
- *Integrity*

3.2 Human Resources

Whether full-time (career), volunteer (not paid) or POC (paid-on/per-call) volunteer; a fire department's employees are its most valued asset. Emergency services are often delivered under difficult and stressful circumstances, with little room for error. Fire departments must be adequately resourced with staff, equipment, and training to be effective in delivering the highly technical services to achieve service excellence. As a result, a considerable effort is warranted to ensure that only highly committed, team-oriented, and physically able employees are recruited, trained, and retained.

An effective organizational structure must promote and support strong, effective leadership, sound business management and continuity, and effective communication with opportunities for staff development. The LBFS utilizes the support of the Township's administration to assist with achieving their human resource goals and objectives, including:

- Recruitment and selection
- Compensation and benefits
- Employee relations
- Performance management
- Employee wellness
- Policy implementation and interpretation

During the period of Behr's involvement in developing this fire service master plan the staff demonstrated a strong commitment to their mandate and consistently providing a high level of service to the community while maintaining the safety and health of the members.

Lucan Biddulph Township maintains a non-unionized work force, and as a result does not have collective agreements to maintain, however most employer-employee issues are handled through policy. Both Fire Chiefs maintain job descriptions for all positions currently in their organization. Both LBFS fire services work closely with their respective Fire Area Board on policy direction.

Behr recognises all members of the LBFS have dedicated their time and energy to faithfully serve their communities by using training, technology, and commitment in providing valued service to their citizens and visitors. LBFS is a proud fire service that values their past, embraces the present and looks forward to the challenges of the future.

3.2.1 Summary of Interview and Survey Results

The fire master planning process was initiated by providing Lucan and Granton firefighters, fire administration, select Lucan Biddulph senior administration and Fire Area Board members an opportunity to comment on numerous aspects of fire rescue operations. Eleven interview participants and 18 survey respondents (61% of Lucan and 38.95% of Granton survey requests) provided responses to similar questions and statements. The following key themes emerged from this process:

1. Both the Lucan and Granton fire services are well-managed organizations with strong leadership and a highly committed group of volunteer fire staff. Almost all survey and interview participants felt that Lucan Biddulph currently received appropriate fire and rescue services. Future demand for services is predicted to continue to increase, particularly in the settled areas with specific concerns around high density and vertical height development.
2. The volunteer model is well supported by Council and residents of the communities. Recruitment has not been an issue, with a current waiting list to become a member of the fire service. There were suggestions that increased public education around fire prevention and the fire services being provided by the LBFS could be increased.
3. Retention of volunteer firefighters has not negatively affected the ability to mobilize a sufficient response force to most incidents. Limitations such as low daytime and weekend response of firefighters were identified during the interviews and surveys. In addition, the absence of complete response data for assemble time, arrival on scene and effective response force needs to be addressed. See section 4.4.2.1.
4. Both stations were reported to be well positioned to provide services across the municipality. Most participants felt the stations were functional but were at capacity and had limited space for conducting confidential meetings, training, and storing apparatus and equipment. There were numerous comments regarding the ability to house an aerial device in the Lucan fire station that most suggested was a need for Lucan Biddulph.
5. Most firefighters agreed that they are well supplied with both small equipment and apparatus. However, numerous comments were made regarding the need for an aerial fire truck capable of providing rescue and a high-volume elevated master water stream because of the recent and ongoing construction of higher storied structures and close high density construction trends.
6. Most firefighters felt the current level of training was adequate. Live-fire training was limited and could be increased. The weekly one-hour training nights were mentioned as too short to effectively conduct training evolutions. There were numerous comments supporting for the need to have a local training area.

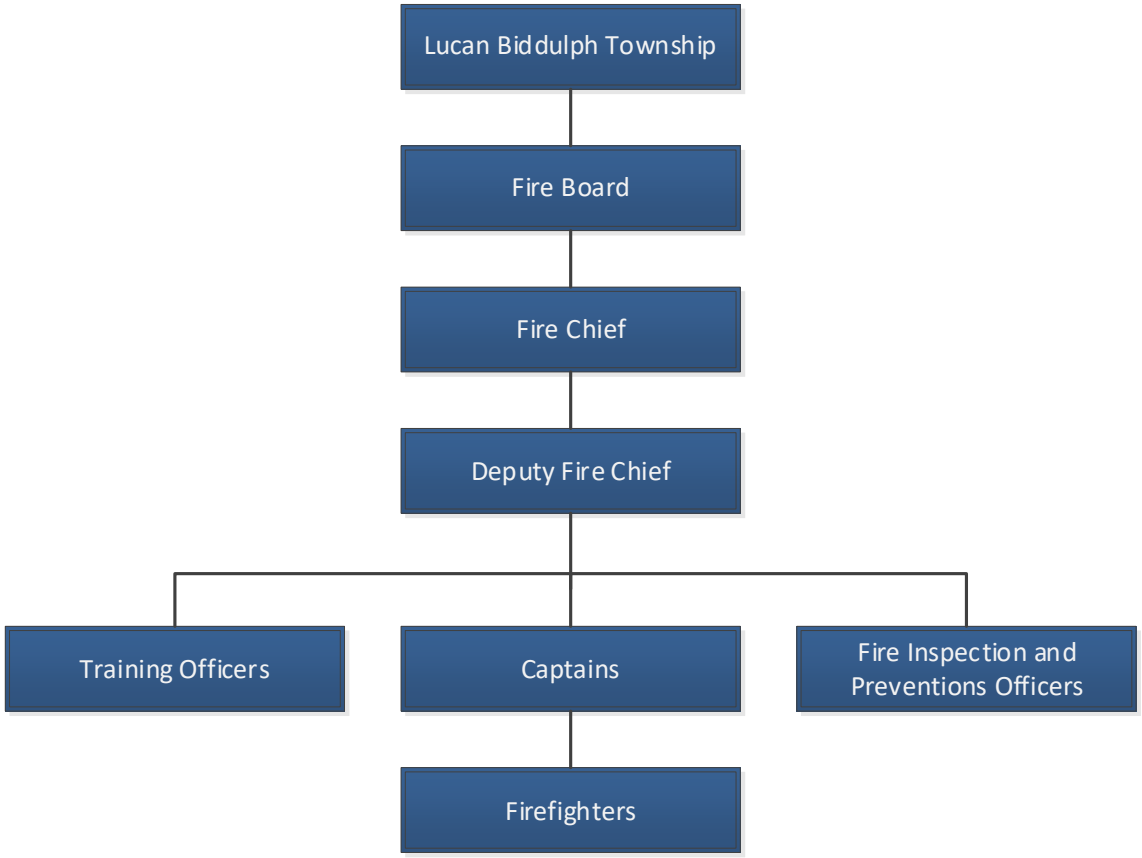
3.2.2 Staffing Complement

3.2.2.1 Lucan Fire Station

The Lucan Station is led and managed by a fire chief along with a volunteer deputy chief. The roster consists of 24 volunteer firefighters including three Captains, one Training Officer and one designated Fire Prevention/Training Officer. An additional Fire Prevention Officer is currently being employed on a contractual basis.

The Lucan Station has recently moved from four squads to three to provide the necessary response capacity to their fire protection demand zone. Each squad is led by a Captain with firefighters assigned to each.

Figure 6: Lucan Station Organizational Chart

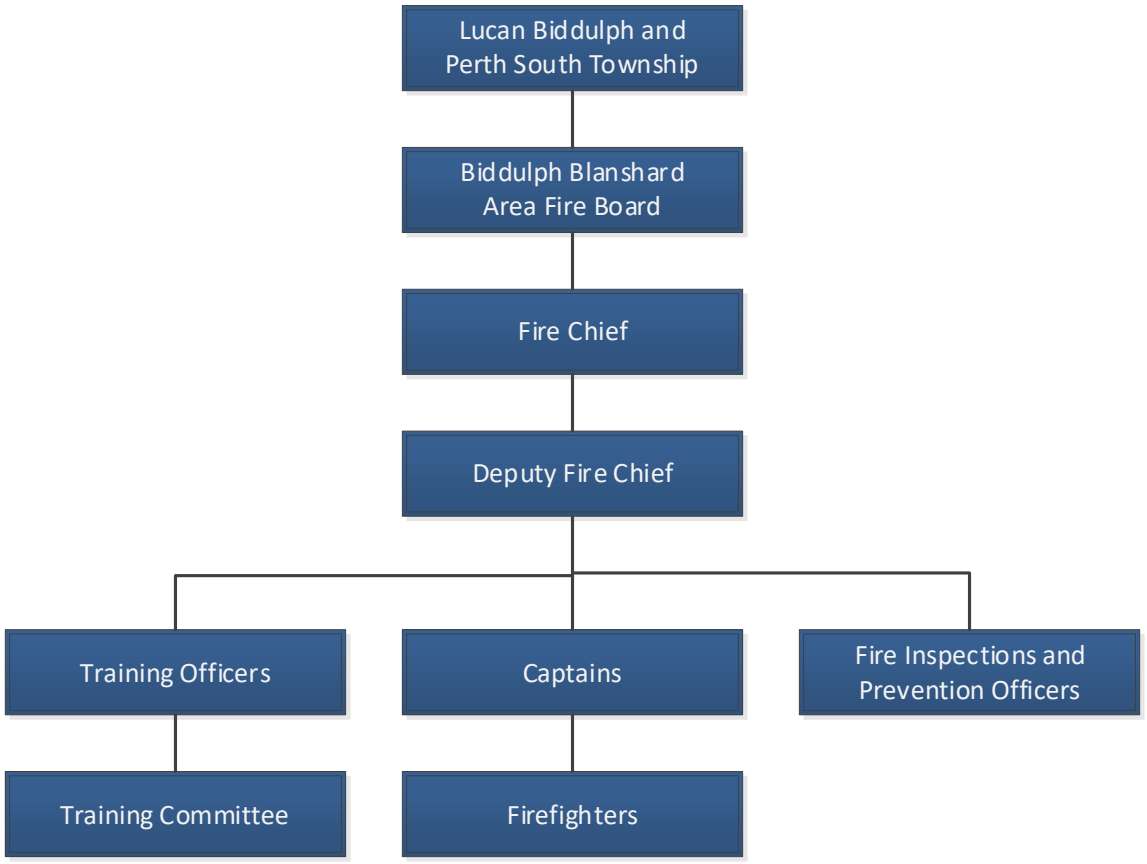


3.2.2.2 Granton Fire Station

The Granton Fire Station is led and managed by a fire chief along with a volunteer deputy chief. The fire station roster consists of 24 volunteer firefighters including 3 Captains, 4 Training Officers and one designated Fire Prevention/Training Officer. An additional Fire Prevention Officer is currently being employed on a contractual basis.

The Granton station has four squads to provide the necessary response capacity to their fire protection demand zone. Each squad is led by a Captain with firefighters assigned to each.

Figure 7: Granton Station Organizational Chart



Note: *The station captains, training officers, fire prevention/fire investigations, and firefighter positions are all considered as front-line volunteer firefighters.*

Table 13: Lucan Biddulph Fire Services 2023 Staffing by Station

Station	Staffing
Lucan *Volunteer Staffing 25* *Full-time Staffing 0*	- 1 Fire Chief - 1 Deputy Fire Chief - 2 Fire Prevention/Fire Investigation Officers (1 Training) - 1 Training Officer - 3 Station Captains - 17 Firefighters
Granton *Volunteer Staffing 27* *Full-time Staffing 0*	- 1 Fire Chief - 1 Deputy Fire Chief - 4 Training Officers - 3 Station Captains - 17 Firefighters

Lucan Biddulph staffing levels at each of their fire stations are subject to change depending on resignations and/or retirements of volunteer staff that may occur during the year. Volunteer fire departments rely on a strong complement of trained volunteer firefighters, recognising that at times all their firefighters may not be able to respond when called upon. Most volunteer departments will establish rules or expectations for their firefighters. These typically require that firefighters live or works near the fire station and include response expectations. As well, many require that a certain percentage of training sessions and responses be met, with the goal of providing a timely and competent response to the emergency.

Lucan Biddulph has developed operation fire service policies. This policy includes the rules and expectations for all staff including residency requirements and attendance expectations for both emergency response and training. Given the fire area coverage demands, Granton fire service does not have a similar policy and relies on volunteer firefighters from both Lucan Biddulph and Perth South fire demand zones.

Many volunteer fire departments in North America struggle to attract dependable staffing levels to ensure safe and effective response levels at all times of the day is difficult to maintain. This is compounded when the fire station is in a small rural community with limited persons willing or able to take on this obligation. This again can be more challenging when the fire station has low call volumes that are often discouraging members to maintain the necessary training and attendance expectations asked of them.

These challenges do not appear to be a current issue with either of the LBFS fire stations, with manageable resignations or retirements and an enviable wait list of new volunteer firefighter recruits waiting to be offered positions when vacancies occur.

The reliance on volunteer firefighters to routinely fill staffing requirements is something that should be consistently evaluated. While there are financial and community advantages to relying on volunteer staff to fill positions, the need for sufficient and reliable firefighting resources is paramount for a community's safety.

Observation #6: The Granton Station does not appear to have formal policy on volunteer firefighter expectations, working conditions, and compensation.

Recommendation #6: Develop a comprehensive policy document that details firefighter expectations, working conditions, and compensation formula for both the Lucan and Granton Station.

(Suggested completion: 6-12 months)

Rationale: *An approved policy document that details the expectations, working conditions and compensation formula will provide operational expectations for the firefighters and the townships they serve.*

3.2.3 Department Leadership, Management and Operations

Effective leadership and management start at the top of an organization to guide it towards success. With increasing pressure to find value for money, elected officials are relentlessly looking for ways to increase the value for money proposition for their citizens. Department managers are challenged to maintain or increase services while avoiding services cost increases. This environment generates the need for communities to adopt more business-like approaches for delivering public safety services. Managers of fire and emergency services are required to develop private sector-like business practices such as:

- Conducting regular market (external) cost analysis
- Developing performance measures and objectives for core services including emergency response, fire prevention, public education and health and safety
- Regularly monitoring and reviewing performance to determine effectiveness.
- Ensuring value for service

In some cases, this requires a shift from the historical approach of a focus on day-to-day service delivery to scanning the future and moving towards a department that is responsive to change, sustainable and efficient.

Fire department leaders must also adopt a business-like approach to leading and managing their departments. Along with their municipality's senior administration, they need to be proactive and examine all aspects of their service delivery systems to look for innovation in efficiencies and effectiveness.

The following figure suggests how to allocate leadership time to effectively operate a fire department, scan for improvement opportunities and implement system improvements:

Figure 8: Fire Service Time Management

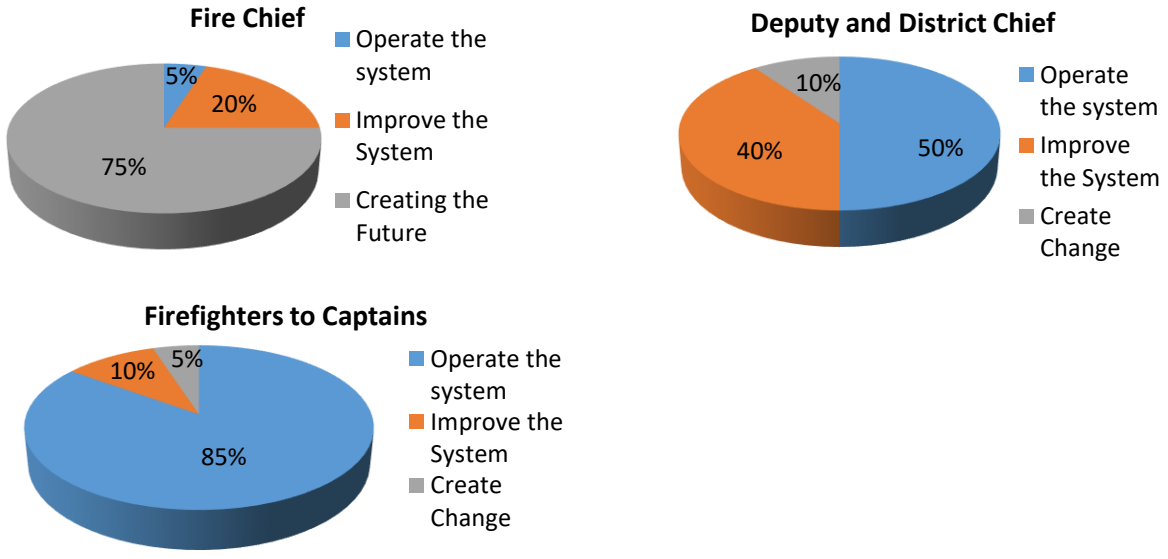


Figure 8 illustrates two important points: one, the amount of time allocated to operating, improving, and identifying the need for change varies at different levels in the organization; and senior leadership positions in LBFS must retain the capacity to identify and implement change. Current community growth projections, risk factors, volunteer attrition and increasing management demands associated with maintaining a diverse volunteer service will require sufficient management staff capacity. The chief officers should be focusing most of their time on improving the current system and creating change to meet future challenges. An effective organization structure allows for roles and responsibilities to be evenly distributed.

The management and administration team, including captains, require the capacity to undertake and complete fire service management and strategic level requirements, including those recommended in this FSMP. Based upon our review of LBFS organizational structure there is currently sufficient oversight and management capacity to adequately perform the identified responsibilities. This observation is based upon review of the current job descriptions, volunteer limitations, interviews and survey data, and the comparative community analysis.

As previously identified, Lucan Biddulph Fire Services has two separate Fire Area Boards for oversight of each of the two fire services. The Lucan Biddulph Fire Area Board reports directly to the Lucan Biddulph Council, while the Biddulph Blanshard Fire Area Board reports to both the Lucan Biddulph and Perth South Councils. The administrative leadership team appears sufficient and effective taking into consideration the working relationships of both Fire Area Boards, the two Fire Chiefs and the two Deputy Fire Chiefs.

During the interviews, the current workload for the fire prevention and training officers was identified. These positions should be carefully monitored. The current number of positions accurately reflect their responsibilities; however, relying on the increasingly demanding workload from these volunteers may become a concern. These positions are assigned specific portfolios which requires many hours of commitment which can be difficult to accomplish on a voluntary basis. Much care must be taken to ensure volunteers are not over-tasked.

A highly functioning team is one that understands each person's roles and responsibilities and brings their skills together in a collaborative manner to lead the organization in achieving their vision, mission, and goals. Therefore, it is important to ensure that accurate responsibilities and updated job descriptions are made available and respected for each team member to promote role clarity. Traits of a high performing team include:

- Trust
- Strong communication
- Transparency
- Collaboration
- Support
- Clarity
- Adaptive
- Reflective

Leadership is a function of all members of LBFS. Chief officers, captains and firefighters contribute to the leadership required to achieve service excellence in a fire department. Day-

to-day station leadership is a responsibility shared with the chief officers and the captains. These positions play a critical role in leading, managing, and mentoring firefighters. This role is crucial in ensuring firefighter practice is aligned with department policy, as well as being the critical link in the chain of command. Within the Lucan Biddulph organizational structure, it is imperative that both Fire Chiefs continue to work closely with each other and engage with all service members for input and constructive feedback.

Results from both the interview process and survey results have demonstrated that the Fire Chiefs have consistently demonstrated strong leadership and team building skills. Both Fire Chiefs are heavily involved in operational response and direction, and has not compromised any of their administrative duties, but rather set the bar for the high level of performance and cooperation for all members of the LBFS.

The station officers and firefighters are responsible for the delivery of most services. They are the primary point of interaction between a fire department and someone in crisis or the public. Their leadership is exhibited by their professionalism and commitment to service excellence. Although their influence may be limited to their immediate coworkers, their role in forming public perceptions regarding the value and support of their services is critical.

Finally, the importance of maintaining a team atmosphere across the fire service and commitment to common goals cannot be overstated. Despite the varying roles and responsibilities assigned to managers, administrative, senior officer and more junior staff, the characteristics of a successful team should be promoted at every level in the organization. As strategic direction and vision are identified, they should be openly shared across the department.

Officers and firefighters often work in isolation from the fire chief. This heightens the need for leadership positions, including the chiefs and station officers to communicate frequently and bridge perceived gaps regarding commitment to mission and service excellence. It also highlights the need to recruit only the best candidates to join the LBFS team.

Based upon our review, The LBFS is positioned to continue service excellence in the future. Led by each Fire Chief, the leadership team needs to work closely together to guide and manage the department while continuing to demonstrate the high degree of pride and commitment to the fire service and their community.

3.2.4 Lucan Biddulph Fire Services Administrative Positions

The administrative team of LBFS is considered to include the positions of the Fire Chief and Deputy Chief from both Lucan Biddulph and Granton Fire Station. LBFS administrative position summaries taken from the current Township of Lucan Biddulph job descriptions. The following is a summary of each position.

3.2.4.1 Fire Chief

The Fire Chief is responsible for the organization and direction of the volunteer Fire Department to ensure that loss of life, property, or injury because of fire or any other emergency is prevented and/or minimized. Reporting to the Chief Administrative Officer

and Fire Board, the Fire Chief provides supervision, management, leadership, technical expertise and related communications for fire and emergency services (fire suppression, fire prevention, emergency response, fire code enforcement, and public education/community relations). The Fire Chief is responsible for directing the activities of the Lucan Biddulph Fire Department and its members, ensuring they have adequate training and equipment to carry on their duties.

3.2.4.2 Deputy Fire Chief

The Deputy Fire Chief will assist the Fire Chief in the organization and direction of the volunteer Fire Department to ensure that loss of life, property, or injury because of fire or any other emergency is prevented and/or minimized. Reporting to the Chief Administrative Officer, Fire Area Board and Fire Chief, the Deputy Fire Chief provides supervision, management, leadership, technical expertise and related communications for fire and emergency services (fire suppression, fire prevention, emergency response, fire code enforcement, and public education/community relations). When the Fire Chief is absent the Deputy Fire Chief will be responsible for directing the activities of the Lucan Biddulph Fire Department and its members, ensuring they have adequate training and equipment to carry on their duties.

3.2.5 Lucan Biddulph Fire Services Firefighter Positions

The LBFS firefighter positions are consistent with industry best practices that provides for defined roles and responsibilities of each position and providing a chain-of-command structure within each fire station. LBFS firefighter position summaries taken from the current Township of Lucan Biddulph job descriptions:

3.2.5.1 Captain

The captain has the responsibility for the Firefighter Squads and does the related work as required. A Captain will administer the training to the Firefighters that has been delegated to them from the Training Officers under their guidance.

The captain will be expected to respond and work in all types of weather and less than ideal conditions. He/she could have to enter hazardous atmospheres and areas and will be expected to work in a safe manner. Where necessary, the captain will be required to perform all the duties of a Firefighter and be ready to do so at each call.

3.2.5.2 Training Officer

The Training Officer has the responsibility for the Captains and Firefighter Squads and does the related work as required. The training Officer oversees the fire training under the direction of the Fire Chief. The Training Officer will delegate the training to the captains for them to administer the training to the Firefighters under their guidance. In the absence of the Fire Chief and Deputy Fire Chief the Training Officers will assume the responsibilities and roles of the Fire Chief and Deputy Fire Chief.

A Training Officer should have the ability to use sound judgment, be resourceful, think and act strategically and effectively in a community service environment. Carry out tasks requiring significant concentration on a variety of activities with frequent interruptions and changing priorities. Can stay current with the training requirements of the Fire Department and adjust training programs for the ever-changing needs of the Department.

Some of the work results in exposure to the discomfort of working outdoors in rain, heat etc. Exposure to unpleasant but not hazardous chemicals, dealing with unhygienic conditions and related conditions. Regular but not constant interruptions and situations, exposure to emergency scene trauma and public criticism.

3.2.5.3 Fire Prevention/Fire Investigation Officer

The Township of Lucan Biddulph is mandated to respond to complaints and requested inspections related to fire safety concerns by the Ontario Fire Protection and Prevention Act, 1997. Also, routine annual inspections on vulnerable occupancies are required to be completed. The fire prevention and fire Investigation officer duties and responsibilities have been contracted to a third-party for a term of three years. As part of this contract, training and mentoring will be provided for someone to take over once the contract has ended.

3.2.5.4 Firefighter

The firefighter responds to all emergency calls within the Lucan Biddulph Fire Area, participating in all forms of fire suppression activities and emergency operations. Where necessary assumes command when no other officer is present until relieved by an Officer. Their response to an emergency is directed by any Officer in the Lucan Biddulph Fire Department. The work is done in accordance with all established policies, safe practices and requires the exercise of good judgment.

The firefighter will be expected to respond and work in all types of weather and less than ideal conditions. He/she could have to enter hazardous atmospheres and areas and will be expected to work in a safe manner. Where necessary, the Firefighter will be required to perform all duties as trained and be ready to do so at each call.

3.3 Remuneration, Recruitment, Selection, Retention, Promotion

3.3.1 Remuneration

The Lucan Biddulph Fire Service relies on sufficient volunteer firefighters to deliver necessary emergency services to their community. The compensation provided to firefighters, while not usually the main motivation for joining a volunteer service, is an important component that must be considered, and becomes more of a factor for retaining firefighters fire officers.

The municipality is committed to recruiting the best candidates possible. Competitive salaries and benefits are offered to all their full-time positions. The municipality maintains a non-unionized work force, and as a result does not have collective agreements to maintain,

however most employer-employee issues are handled through policy. The positions on the municipal salary grid are determined each year by a review of their respective job requirements and qualifications.

Volunteer fire departments can be structured to either be a totally volunteer fire service, but more typically are referred to as a 'paid-on call' or 'paid-per-call' fire service where a stipend or hourly remuneration is given for emergency response and/or training. Additionally, depending on the size and complexity of the community, they will often be led by a full-time fire chief. Additional managerial or administrative positions may also be required either in a full-time or part-time basis.

Collectively, the Lucan Biddulph Fire Service is referred to as a volunteer service, however there is compensation paid to each member through resolution passed by the Fire Area Boards. The service has an approved wage structure for the Fire Chief, Deputy Fire Chief, Captain, and Training Officer. Each volunteer member is awarded a monetary value based on emergency response and training attendance including a training incentive requiring a minimum of 75% attendance. Conversely, the Granton Station has a set amount of compensation available each year that is divided amongst the firefighters based on their emergency response and training hours performed in that year.

Observation #7: Currently the Township maintains two separate and different compensation structures for the firefighters. The current remuneration process was not identified as a critical issue, however the monetary value placed on volunteer firefighters must be constantly monitored and amended to ensure a competitive wage rate and benefits are aligned with surrounding communities. Additionally, the compensation formulas for are not consistent between the two fire services. While this has not been raised as a concern, it could become an issue in the future.

Recommendation #7: Establish a consistent wage structure for all volunteer firefighter positions.

(Suggested completion: 12-24 months)

Rationale: *The typical wage structure for volunteer fire services is an hourly rate for the various positions (firefighter, officers, and chief officers) combined with incentives for training, practice session participation, and attendance at emergencies. Wage rates are normally determined through comparisons with adjacent and similar services.*

3.3.2 Recruitment

Recruitment is a key function of all emergency service agencies. The community places a tremendous amount of faith in their fire department personnel, trusting them to provide the highest level of service when the public is most vulnerable. As such, the process used to select personnel should be very comprehensive.

Experience within the emergency services industry has shown that relaxing the requirements for entry-level positions is not the answer for recruiting any employee. Instead, most departments have had the greatest success when qualified applicants are encouraged to apply. This process often involves targeted advertising and promotional campaigns aimed at demonstrating the benefits, as well as the personal satisfaction of becoming part of the fire service. The expected requirements for residency, required training, and attendance must be clearly explained early in the process. Existing firefighters should be encouraged to participate in any recruitment campaign.

LBFS, like other fire services in North America, must train, maintain, and equip their firefighters to the recognized NFPA standards for the services being delivered. As this is typically provided at no cost from the recruit firefighters it does require substantial investment in both financial and resource commitments. As such recruit selection should be carefully managed.

The interview and survey participants suggested that LBFS's firefighter recruiting efforts for volunteer firefighters were successful in attracting quality applicants. A process for recruiting and selecting necessary volunteer firefighters has been established. Job opportunities are listed on the Township website or on billboards in front of the fire station.

The preferred qualifications for all LBFS firefighters include:

- Successfully complete a probation period as set out by the Lucan Biddulph Fire Department.
- Good knowledge of modern firefighting and fire prevention methods.
- Good knowledge of the Township and fire area protected by agreement.
- Good knowledge of rescue and first aid procedures.
- Successful completion of the NFPA 1001 Firefighter Level 1 and 2 within the first three years of employment with the department.
- Certified to NFPA 1072 Hazardous Materials.
- First Aid and CPR, AED Certification.
- Valid D/Z Driver's Licence with a satisfactory driver's abstract as determined by the Township of Lucan Biddulph.
- Valid and satisfactory Vulnerable Sector Check.
- Ability and flexibility to always respond when available to do so.

3.3.3 Selection and Training of Recruit Firefighters

LBFS has an extensive selection and on-boarding process unique to each of the two fire services. After submitting their application and meeting the minimum qualifications, firefighter candidates move through a multi-stage process. Accepted applications are kept on file and when there is a vacancy the candidates continuing to meet all the initial requirements begin the following process:

- Once the complete application package is reviewed by the Fire Chief the candidate on-boarding process begins
- Performance will be reviewed after each stage and a decision will be made regarding suitability to continue as a recruit firefighter.

LBFS receives a substantial number of applications for volunteer firefighter positions for both the Lucan and Granton fire stations and through the vetting process this number is ranked for appropriate candidates offered to commence their training.

3.3.4 Retention

Retention of LBFS firefighters has not been an operational concern to date. Recent history has shown that the primary reason that they lose trained firefighters is because of retirement,

The primary reasons for resignation from a volunteer firefighter service include:

- A physical move of residence or workplace out of the municipality
- Career/primary work demands.
- Family commitments
- Childcare
- Obtain a career firefighter position.
- Increased training demands of the position up to NFPA 1001 and other requirements
- Increased demands on department time obligations
- Occupational and safety requirements

A fire service that has a constant turnover of trained firefighters results in staffing shortages, operational limitations, experience, and increased costs of recruitment and training.

Observation #8: LBFS typically has a loss of 2-5 volunteer firefighters each year to resignation or retirement which requires replacement by new inexperienced POC volunteer firefighters. It is important to note that recruitment and retention of volunteer firefighters is a prevalent challenge across Canada and the U.S. The attraction and volume of applications received in recent recruitment initiatives for volunteer firefighters has been stable for LBFS.

Recommendation #8: The fire chiefs should continue to evaluate the ability to sustain a viable firefighting complement and develop retention strategies such as live- in, live-out, work experience programs, tax breaks, and benefits that enhance volunteer retention and operational effectiveness.

(Suggested completion: 1-12 months (ongoing))

Rationale: *The fire service relies on sufficient fully trained volunteer firefighters in each of their fire stations to deliver necessary emergency services to their community. While both fire services currently have waiting lists for potential new recruits, this may not always be the case. The timelines to recruit and train new firefighters is typically close to a year which necessitates advance anticipation of recruit volunteer firefighters' numbers. Retaining an experienced, solid core of fully trained volunteer firefighters lessens the financial impact and service level gaps to LBFS and their community. Keeping experienced firefighters in the organization performing other non-emergency operations can also enhance the overall effectiveness of the service*

3.3.5 Promotions and Advancement

The promotional policy for administrative and volunteer firefighter officer positions are filled through a competitive process and appointment. Promotions to Captain rank for the LBFS is offered to members demonstrating responsible firefighting skills and taking the necessary training to qualify him/her for promotion when a position becomes available."

The fire chiefs review all applicants for promotion and the successful applicant shall be chosen based on the applicant's experience, fire station record, training record, and any tests and interviews as may be required by the fire chiefs. The results of the promotional process are reported to the Fire Area Board at their next meeting.

The Granton Station Fire Chief indicated that in his time as Fire Chief, there has not been a retirement or resignation from the captain rank and has not been required to conduct a promotional process to date.

3.4 Training

Training and competency development are essential and ongoing activities for all contemporary fire departments. A prepared and competent workforce reduces risk and safely optimizes service delivery. An effective workforce-training program aligns the growth and development of personnel to the organization's mission and goals.

The recent closing of the Ontario Fire College and the change to regional training centres resulted in a partnership agreement between Middlesex County and Elgin County to develop a regional training facility under the purview of the Office of the Fire Marshal.

The Ontario firefighter certification regulation filed April 14, 2022, and enacted on July 1, 2022, introduces mandatory minimum certification standards for firefighters that align with fire

protection services being provided. This regulation will help ensure that firefighters have consistent training according to the level of service set by a municipality supporting firefighter and public safety.

Training and education program activities are identified by assessing the Knowledge, Skills, and Abilities (KSAs) needed for the firefighters to perform their duties as outlined in the department's SOGs and procedures. When firefighters are competently trained and possess the KSAs for the services they are expected to provide, they reduce risk and increase their own safety and the safety of the public they serve. The training program of a fire service is a very important and demanding portfolio. The scheduling of instructors, facilities and participants is a daunting task to ensure safe and consistent training, while not negatively impacting the operational capacity.

The LBFS has designated training officers for both the Lucan and Granton fire stations that develop and schedule all training requirements. Each of the fire stations Captains are tasked with overseeing the recruit and core competency training that occurs on the designated training nights. Practical training activities are typically performed at or near the fire station or within the community. Some additional training requires travel to one of the regional training facilities or to an accredited agency. LBFS relies on weekly training sessions for the delivery of core competency and related training following the OFM requirements at each of the fire stations. The core training syllabus includes:

- NFPA 1001/1072 – Recruit Training
- NFPA 1041 – Fire Service Instructor Level I
- NFPA 1021 – Officer Training Level I
- Structural search, victim removal, survival, and fire behavior
- Scene lighting and scene safety
- Auto extrication
- Emergency medical care and first aid
- Driver training
- Water and ice rescue (shore based)
- Low slope angle rescue
- Firefighter health and safety
- Personal protective equipment (PPE)
- FD communications
- Pumper and tanker operations
- Equipment familiarization
- Water supply and fire streams
- Ladders
- Pre-planning
- Ropes, webbing, and knots
- Hose lays and uses.
- Loss controls
- Rescue tools
- Technical rescue

Observation #9: The Granton fire station does regular Tuesday night training that starts at 7pm and continues until the required training is completed. Lucan fire station schedules their training nights similarly, however, caps the training at one hour. The survey confirms that the members believe one hour training sessions are not enough.

Recommendation #9: Amend current weekly training to a minimum of two hours for both stations.

(Suggested completion: 6-12 months)

Rationale: *Limiting the weekly training time to one hour is not an efficient use of time required to maintain skill competencies or effectively deliver necessary core training.*

3.4.1 Industry Recommended Qualifications

NFPA certification standards represent industry leading practices for fire service training. However, it must be emphasized that the following list may not apply to all fire departments. The qualifications required for specific positions vary depending on identified community risks and services provided to manage the risks. Position profiles and associated knowledge, skills, and abilities (KSAs) should prepare staff to competently provide the services necessary to address the risks in their community.

Further, organizational size and structure will often change the breadth of tasks and competencies required by specific positions. For example, large career fire departments tend to have a higher degree of specialization for senior positions and less need for senior officers to be directly involved in fire suppression or rescue operations. In contrast, smaller volunteer POC or paid-per-call volunteer department senior officers will lead or be directly involved in fire suppression and rescue operations.

The following list of NFPA standards is offered as a general guideline for NFPA training standards aligned with most fire department positions:

Deputy Chief and Fire Chief - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 2) - NFPA 1002 Pump Operator - NPFA 1021 Fire Officer (Level 2) - NFPA 1041 Instructor (Level 1) - NFPA 1403 Standard on Live Fire Training Evolutions - NFPA 1521 Incident Safety Officer Captain - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 2) - NFPA 1002 Pump Operator - NPFA 1021 Fire Officer (Level 1) - NFPA 1041 Instructor (Level 1) - NFPA 1403 Standard on Live Fire Training Evolutions - NFPA 1521 Incident Safety Officer Safety Officer NFPA 1521 Incident Safety Officer	Lieutenant - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 2) - NFPA 1002 Pump Operator - NPFA 1021 Fire Officer (Level 1) NFPA 1041 Instructor (Level 1) Firefighter - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 1) - NFPA 1002 Driver/Pump Operator - NFPA 1006 Vehicle extrication Level 1 Operator - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 1) - NFPA 1002 Driver/Pump Operator - NFPA 1002 Aerial Operator - NFPA 1006 Vehicle extrication Level 1 Training Officer - NFPA 1041 Instructor (Level 1) - All Qualifications required to instruct firefighters and recruits. - NFPA 1403 Standard on Live Fire Training Evolutions

3.5 Health and Wellness

The active pursuit of employee health and wellness is extremely important to an organization. The benefits may include but not be limited to:

- Early recognition and treatment of illness
- Reduction in absenteeism due to short/long-term illness
- Decreased injuries during normal duties
- Decreased workers' compensation board (WCB) premiums
- Increased employee career longevity
- Improved work/life balance

The Lucan Biddulph Township provides a basic health and wellness program for its employees, including volunteer firefighters. The mental health of first responders, whether career or volunteer, is an issue that has garnered considerable attention over the past 10 years. As

identified in the International Association of Firefighters Wellness-Fitness Initiative Manual[13], "a firefighter's work includes disruptions in sleep patterns, sporadic high intensity situations, strong emotional involvement, exposure to dangerous environments, life and death decisions and exposure to extreme human suffering." Over time, this type of work can impose considerable stress on some individuals.

Observation #10: Lucan Biddulph has an established health and wellness program for their staff; however, the fire service does not have a dedicated health and wellness program tailored specifically for the unique needs of a firefighter.

Reference: Section 3.5 Health and Wellness, Page 49

Recommendation #10: Develop a unique mental health and wellness program for LBFS to meet the specific needs of their firefighters.

(Suggested completion: 6-24 months)

Rationale: *An important component within the core services of a fire service is recognizing the unique workplace challenges that firefighters endure. Making available industry specific mental health and wellness and peer-to-peer program for the mental and physical wellbeing of firefighters is strongly recommended*

3.6 Core Services

As most modern fire departments, LBFS provides a broad range of services to the citizens of the Lucan Biddulph municipality and designated response areas. Services provided should align with the identified community risks as that identified in a CRA and the needs of the citizens. Cyclical evaluation of community risks and fire department response capability is necessary to support ongoing emergency planning. Most citizens will not have the need to access fire department services. However, when emergencies occur, service expectations are high. Good planning processes are necessary to ensure the community gets the services and the value they expect.

LBFS core services and programs are not approved by bylaw or resolution, but rather by a continuous needs assessment by the Fire Chiefs. As previously identified, a service level policy is recommended that includes core services, capabilities, and response levels

3.6.1 Structural Firefighting

Fire department resources should be adequate to manage the most probable risks. Structural fire suppression encompasses a wide range of tactics for the control and extinguishment of fires originating from several sources. Single-family dwellings are the most prevalent building type in most communities. As a result, these types of structure fires are typically the most probable, but only rated as a low to moderate risk as the consequence are limited to one or two properties. Residential fires are a leading cause of fire-related death, injuries, and property loss in Canada.

[13] *Joint Labor Management Wellness-Fitness Initiative, 4th Edition, p.48*

While in many communities, structure fires are not the most frequent emergency response request, they require a significant investment in resources (equipment and staffing), training and coordination to manage safely and effectively. LBFS trains and maintains their firefighters to the NFPA 1001 Level I and II standard.

Structure fires are an infrequent response type encountered by LBFS. Available staffing and equipment should be adequate for firefighters to be able to safely perform the task expected of them. For LBFS, the recommended NFPA leading practice for fire suppression operations is NFPA 1720. This standard is further covered in Section 4.

Structure fires that require entry into the building for fire suppression and rescue require many critical tasks to occur simultaneously for the safety of both the victims and the firefighters. Each of these tasks may require one or more companies of firefighters to accomplish them safely and effectively. Without enough companies of firefighters on scene, entry may be delayed until some of these tasks are completed.

Structural fire suppression encompasses a wide range of tactics for the control and extinguishment of fires originating from several sources. In both the interviews and survey, firefighters indicated that both Lucan and Granton stations are equipped and properly trained to respond to fires that originate within or outside a structure. Sufficient firefighters arriving on-scene in a timely manner are paramount to facilitate safe and effective rescue and suppression tactics for the control and extinguishment of fires. LBFS maintains a modern fleet of emergency response vehicles and equipment along with a committed team of volunteer firefighters available for emergency response.

Most interview and survey participants agreed that LBFS was adequately trained and staffed to safely manage most structural fire incidents. As previously discussed, LBFS relies on the availability of sufficient trained firefighters responding out of each fire station. Confirmed structure fires will require additional firefighter deployments to safely handle an interior attack and/or rescue. The staffing level constraints consistent with most volunteer fire services is the most significant limiting factor in determining the actual effectiveness of any given emergency response.

As a result of the geographical fire area coverage zone, LBFS relies on many of the firefighters to respond directly to the scene of the emergency to meet up with the response apparatus to form an effective response force. Effective response force is further discussed in Section 4.

During the interviews and within the survey, a degree of concern was expressed regarding the lack of an aerial device within LBFS apparatus inventory. Where aerial apparatus is recommended, and/or required, they must rely on the availability of one from the mutual aid partners for a fee.

Observation #11: LBFS does not have an aerial apparatus within their fleet inventory. Should an aerial apparatus be required for response in the municipality, it would be requested from South Huron Exeter Municipality. The delay or inability to have an aerial apparatus on scene can seriously hinder the safe and effective operations. Also, there is no assurance that this apparatus will be available to leave from their respective community.

Recommendation #11: Conduct a needs assessment for an aerial apparatus to be added to LBFS fleet.

(Suggested completion: 1-24 months)

Rationale: *The requirement of an aerial apparatus on many emergency scenes is critical for safe and effective firefighting and rescue operations. Aerial apparatus is typically required for:*

- *Elevated water streams*
- *Roof top fire attack/entry*
- *Elevated evacuations and rescues*
- *Water curtains*
- *Exposure protection*

The development plans anticipate an increase in commercial, residential (low, medium, and high density) which may increase the need for an aerial apparatus, however response statistics within the community and even in the surrounding areas do not warrant the outright purchase of this type of unit.

The cost of purchasing a new aerial apparatus, in today's current market, may cost in the range of 1.75M to 2.5M dollars. Also, the anticipated timelines to put an aerial into operation could be two years or more and costs will typically rise during the build process of a typical apparatus purchase. Owning and operating this type of apparatus should also consider the cost of training and maintenance as well as storage. This type of apparatus requires indoor storage.

3.6.2 Medical Co-Response

Medical co-response is a valuable service provided by LBFS with their fighters maintaining a minimum level of advanced first aid, CPR and AED certifications. The distribution of fire department resources often exceeds that of ambulance resources and as a result, firefighters are often able to respond to medical emergencies faster, or in support of, ambulance services.

Lucan Biddulph Township maintains a tiered medical agreement with Central Ambulance Communications Centre that outlines the medical protocols that may need the assistance of. Lucan and Granton Station. The current protocols recommend LBFS response to medical calls indicating vital signs absent (VSA) or where EMS will be on an extended response. Survey and

interview participants felt this service was not over-taxing the department's response capacity and was valued by the community.

There are three separate agreements for the medical co-response tiered service. The letters of agreement with Lucan Biddulph and Biddulph Blanshard are dated January 2014 and are endorsed by the fire chiefs and EMS chief Middlesex London EMS. The third agreement is a Perth County Council report dated June 2023 authorizing the Warden and Clerk to execute a tiered response MOU with Township of Lucan Biddulph for the Perth South demand zone.

Observation #12: There are two challenges with the current tiered response agreements; first these agreements identify the tiered response criteria but do not identify the response capabilities in terms of medical qualifications or performance targets. Second, based upon the references provided, these medical co-response tiered agreements do not appear to be authorized by the Lucan Biddulph Council.

Recommendation #12: Update the Establishing and Regulation Bylaw confirming medical co-response as a core service, and further that the response performance capabilities be formally established and approved.

(Suggested completion: 6–24 months)

Rationale: *The authority having jurisdiction for the provision of municipal services is the Township of the Lucan Biddulph Council unless formally relegated to CAO or fire chief for medical co-response*

3.6.3 Motor Vehicle Collisions, Vehicle Extrication

Motor vehicle collisions (MVCs) with or without trapped persons can pose unique hazards to both the victims and responders. Vehicle extrication requires specialized training and equipment. Close coordination with police and ambulance services is necessary for the safety of both victims and responders. Weather conditions also contribute significantly to both the severity of the incident and the effectiveness of the response.

Many of modern vehicles have added risks to firefighters, such as airbag deployment and hybrid vehicles containing fuel cells or batteries. Vehicle collisions or events involving transport vehicles often pose the additional challenge of involving dangerous goods or requiring heavy equipment to manage.

LBFS is well equipped and trained to manage vehicle collision and extrication incidents (services provided to the NFPA 1001 and NFPA 1006 Standard). Depending on the nature of the incident, fire engines and/or tankers are typically deployed to these events. MVCs was the second most common incident over the five-year period within the municipality. Responses on Township and Provincial roadways may present hazardous conditions for all responders. LBFS resources must work closely together with partner agencies at the scene of an MVC.

These types of incidences may require the resources and expertise of LBFS staff including:

- Scene safety
- Fire suppression
- Extrication
- Stabilization
- Medical first aid
- Dangerous goods control
- Special rescue

Additional apparatus and staff are often required to provide additional support for equipment and roadway safety.

3.6.4 Dangerous Goods Response

Response capabilities should align with service levels defined in the NFPA 1072: Standard for Competence of Responders to Hazardous Materials Weapons of Mass Destruction Incidents service level matrix. It requires departments without advanced hazmat (dangerous goods) training to take only a limited role in hazardous materials (dangerous goods) response. There are three dangerous goods response service levels.

The first level of service is the awareness level. This level is the most basic and is for persons who could be the first on the scene of emergency involving dangerous goods. Responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel and secure the area to the best of their abilities. It does not involve donning protective suits to enter the contaminated zone to stop the flow of hazardous materials or conducting decontamination.

The second level of response is the operations service level. Responders are trained to be part of the initial response and control the impact of the release in a defensive fashion. Crews are expected to take a more hands-on approach than considered at the awareness level. They will use absorption, damming and diking to stop or redirect the flow of the hazardous material. Firefighters are trained to don protective suits, enter the hot zone to conduct rescue activities and control the product release. They must also establish a decontamination zone for responders and equipment. Crews also lead the evacuation in the hot zone.

The third level of response is the technician level. Technical-level responders must be certified hazmat technicians, trained in the use of specialized chemical protective clothing and control equipment. Responders at this level take offensive action in responding to releases or potential releases of dangerous goods. Given the required training, cost of equipment and limited community need, this level of service is normally provided by larger communities or private companies through contract.

LBFS does not have a dangerous goods response unit. While incidents involving hazardous materials are infrequent, these types of events can result significant environmental and life-threatening consequences. In addition, a dangerous goods spills or release was identified

and discussed as a community risk factor. Given that the on-duty response of LBFS is provided at the operations and/or awareness level of service with minimal equipment, the township would seek assistance through the Ontario Fire Marshal office to provide advanced dangerous goods response when requested.

3.6.5 Technical Rescue Services

Rescue operations are often unique situations that require specialized equipment and training to ensure the responders maintain the competencies to safely execute the rescue. The challenge in maintaining these skills is the low frequency of the events. As a result, fire departments offering technical rescue services must provide adequate training to maintain competencies and equipment. The LBFS is equipped and trained to provide and maintain competencies for:

- Shore-based Ice rescue
- Shore-based Swift/static water rescue
- Low slope rope rescue

3.6.6 Fire Prevention Services

As departments increase their emphasis on fire prevention activities, communities are seeing a significant reduction in fire-related losses. In Canada alone, deaths caused by fire have been reduced over the last 100 years from an average of 350 deaths per year to 150 each year. Although difficult to measure, effective fire prevention programs reduce fire-related deaths and property loss proportionately to the resources committed. Data collection and analysis will determine the effectiveness of these programs and their impact on the overall reduction of losses.

LBFS utilizes two fire prevention officers out of the Lucan Biddulph fire station and one fire prevention officer out of the Granton fire station designated as assistants to the Fire Marshal to carry out all directives required within the Fire Protection and Prevention Act, 1997 to the Township of Lucan Biddulph.

3.6.6.1 Fire Code Inspection Services

Modern building codes including life cycle safety design and operating requirements are key components of risk management. Cyclical fire inspection programs for high-risk buildings ensure these systems continue to function throughout the life of the building. This is especially important for high occupancy and special purpose buildings such as apartment buildings, hospitals, seniors housing and schools.

While the benefits of an effective fire prevention program are sometimes difficult to fully quantify, the reduction of fire deaths and injuries in Canada following the implementation and enforcement of modern building and fire codes illustrates the value. These services are fundamental elements of a broader community fire reduction and life safety strategy. Fire inspections are critical services in identifying fire hazards and maintaining life safety systems.

3.6.6.2 New Developments Plan Reviews

The fire prevention officers together with the planning and development staff review building and site plans to ensure the construction process complies with Ontario Building Code and Fire Code requirements. This is a key public safety function as the fire risk during the framing phase of wood-framed development is high.

3.6.6.3 Fire Cause and Origin Services

All fires causing injury, death and property loss are to be investigated in Ontario. The Ontario's Office of the Fire Marshall and Emergency Management maintains a fire incident database and provides trend analysis that can be utilized by LBFS to identify specific fire and injury prevention campaigns based upon leading fire and other incident causes. Examples include cooking safety, wood burning appliance safety, smoke alarm testing and maintenance, and fire prevention, carbon monoxide alarm installation, home escape planning and fire prevention week. LBFS fire prevention officers and chief officers are trained and certified by the Ontario Fire Marshal Office to conduct fire investigations to the Township of Lucan Biddulph and contracted areas.

3.6.6.4 Fire Public Education Services

Public education programs and active involvement in the community are important efforts that inform and engage citizens to think about fire safety and risk reduction. Most recently, public education opportunities including station tours and public appearances was limited because of COVID-19 restrictions. Fire safety messaging as well as displaying the services that are provided by the fire services are typical public education activities provided by both the Lucan Station and Granton Station. As the pandemic risks has diminished, the opportunities and requests for such fire prevention activities are expected to increase from schools and community groups.

3.6.6.5 Pre-Emergency Planning

Pre-emergency or incident plans are intended to provide emergency responders with advanced knowledge and processes for a safe and effective response. These pre-plans include information regarding the construction type, occupancy, building status, emergency contacts, utility shutoffs, fire suppression and detection systems installations and locations exposure information, water supply availability, access problems and any other hazards.

Pre-planning programs are not necessarily tied directly to the fire inspection program, but rather include operationally relevant information that was gained on a site visit. Pre-planning should also include potential responses to areas of concern that are not captured in the formal fire inspection program.

Observation #13: LBFS conducts regular familiarization tours with their firefighters on identified industry or high hazard occupancies and does not have a formal pre-incident planning program.

Recommendation #13: Develop a formal pre-incident planning program that will capture risks, fire protection systems, access and egress avenues and other factors relevant to an emergency response to a given property.

(Suggested completion: 6-24 months)

Rationale: *Developing pre-incident plans along with a method that ensure this information is accessible by any responding crew for identified high risk properties will enhance the effectiveness and safety of responding crews.*

3.6.7 Citizen Assist and Public Services

Fire departments play an important but often unrecognized role in the social safety net of communities. When citizens perceive an emergency or an urgent request for assistance, the agency most frequent called to help is the fire department. These types of requests can vary broadly - from a request to rescue a pet to help with flooding. In reviewing LBFS response data, this response type occurs on a frequent basis in the municipality and is 13% of the total call volume. LBFS should continue to provide this service where practical to help in their communities. It is a value-added service of considerable value for citizens making the request and these responses need to be accurately tracked and recorded.

3.6.8 911 and Fire Dispatch

The Strathroy-Caradoc Police Dispatching Bureau provides emergency fire dispatching services for the Township of Lucan Biddulph through a Memorandum of Agreement with the Strathroy-Caradoc Police Service Board, the Corporation of the County of Middlesex, Corporation of the Municipality of Strathroy-Caradoc, and the Lucan Biddulph Municipality. This agreement is discussed further at Section 4.

3.7 Emergency Management Program and Emergency Operation Centre

Ontario's Emergency Management and Civil Protection Act lays out obligations and standards for emergency management programs required of all levels of government. In Ontario, each municipality must develop and implement an emergency management program to protect the lives and property of its citizens.

Lucan Biddulph Council has implemented an emergency management program to protect public safety, public health, the environment, critical infrastructure, and properties and to promote economic stability and a disaster resilient community. This plan enables a centralized controlled and coordinated response to emergencies in the municipality. The main EOC is in the Township Municipal Office. The back-up EOC is designated in the Public Works building. Both Fire Chiefs are members of the emergency management team.

3.8 Mutual Aid and Other Service Agreements

Large emergency events quickly overwhelm the response capacity of most municipal fire departments. This is especially true for smaller fire departments with limited resources. As a result, mutual aid and automatic aid agreements are a necessary component in adding response capacity for these low frequencies but potentially high or extreme consequence events.

Mutual aid agreements between fire departments allow them to assist each other across jurisdictional boundaries. Typically, this happens when local emergencies exceed local resources. They may include fire response, and/or specialty response services including rescue, dangerous goods. Any response would be made by the requesting agency and is not pre-determined in the case of automatic aid. The requested agency may or may not be able to fulfill the request.

Automatic aid agreements ensure a provision of initial or supplemental response to fires, rescues, and emergencies where a fire department situated in a neighbouring municipality can provide a response quicker than any fire department situated in the requesting municipality.

The Province of Ontario through the Office of the Fire Marshall has developed a provincial wide mutual aid plan (MAP) to formalize and maintain mutual aid and automatic aid agreements for identified areas coordinated through an Ontario Fire Marshall appointed fire coordinator. Each area will develop and maintain their respective MAP consistent with the Ontario plan.

The principle of operation of MAPs is to promote and ensure adequate and coordinated efforts to minimize loss of human life and property, as well as damage to the environment through the efficient utilization of fire department and provincial resources in the event of a mutual aid activation during times of natural or human-made emergencies.

Lucan Biddulph is included in the Middlesex County MAP along with 7 other municipalities in the county. There are no boundaries when considering mutual aid assistance and may run into neighbouring counties.

The Middlesex County MAP contains letters of agreement between participating municipalities for both mutual aid and automatic aid structure fire response. This MAP is currently being reviewed and updated by the fire coordinator to be forwarded to the Office of the Fire Marshall for acceptance.

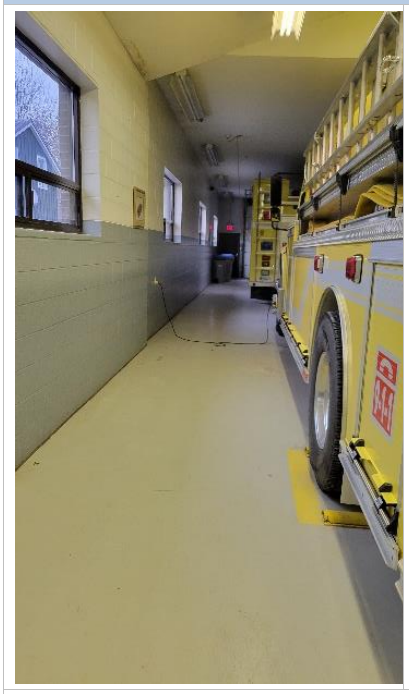
3.9 Facilities

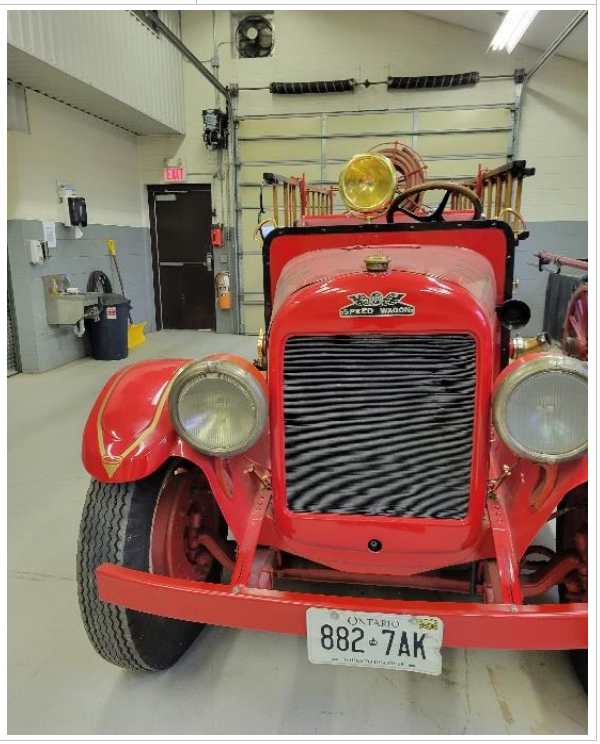
LBFS provides fire and emergency response out of two fire stations that are in the more populated areas of the municipality.

3.9.1 Fire Station Overview and Assessment

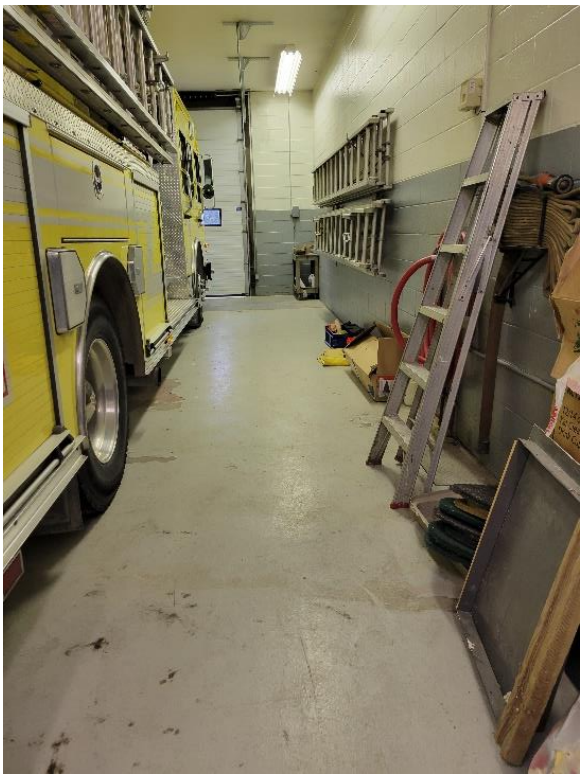
Lucan Biddulph Fire Station						
Address:	216 Main Street, Lucan, Ontario					
Bays:	2 tandem drive-thru bays	Unit Capacity:	4	Year in Service:	1973	
Comments:	This facility serves as the operational station for firefighting staff in the township of Lucan Biddulph. This fire station was built in 1973 and remains functional but is at capacity for present use. Maintenance of this facility is the responsibility of the municipality. The Lucan Fire Hall was expanded ad upgraded in 2000.					
Unit Inventory:	1 Engine	1 Rescue	1 Tanker	1 Vintage truck		

Lucan Biddulph Fire Station

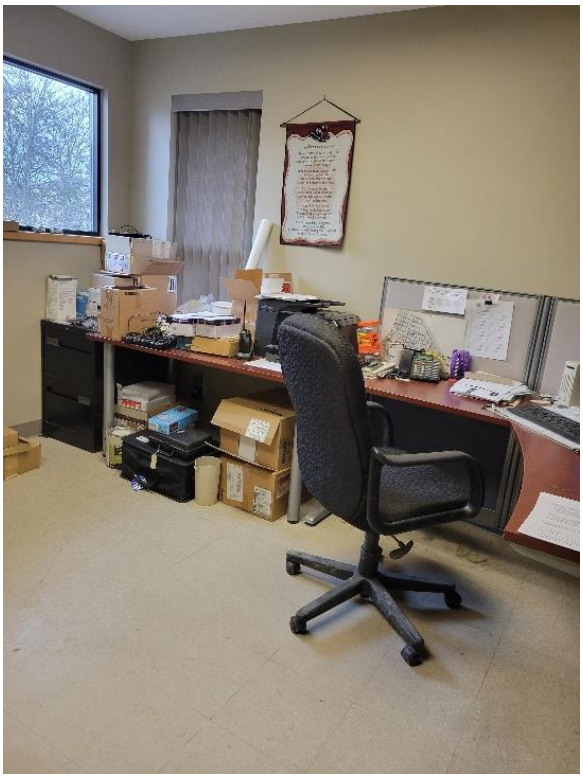


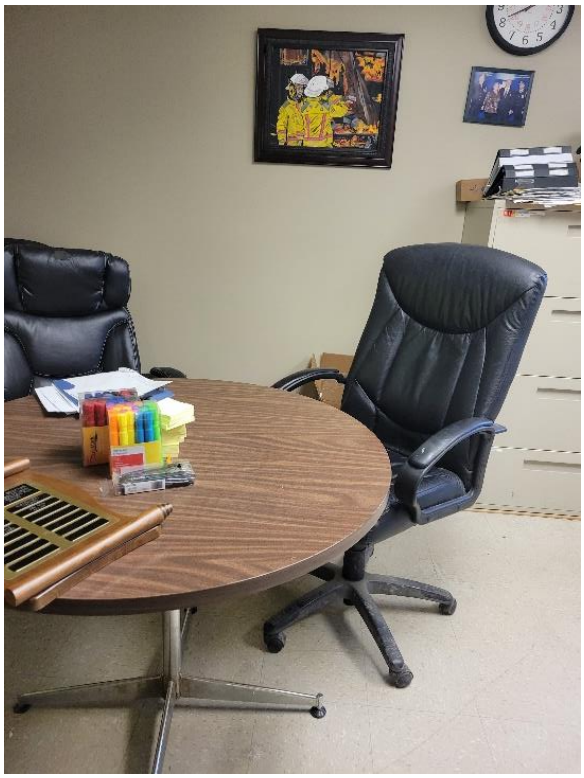


Lucan Biddulph Fire Station



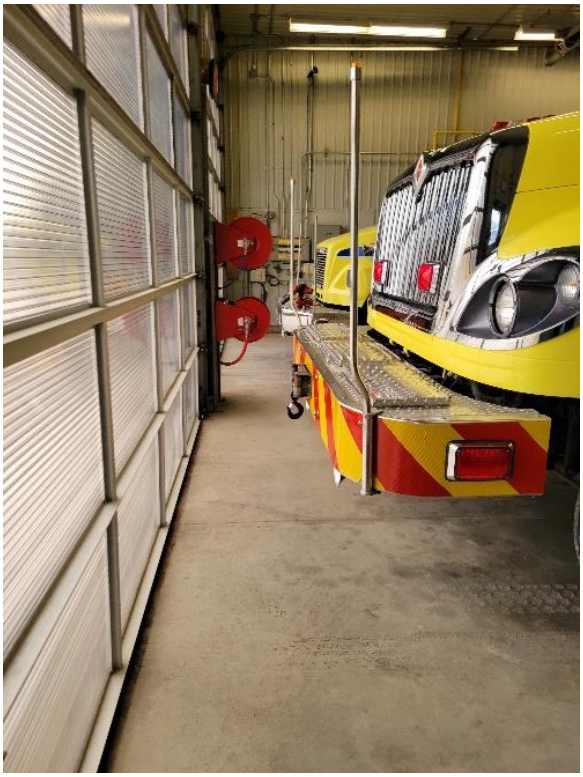
Lucan Biddulph Fire Station



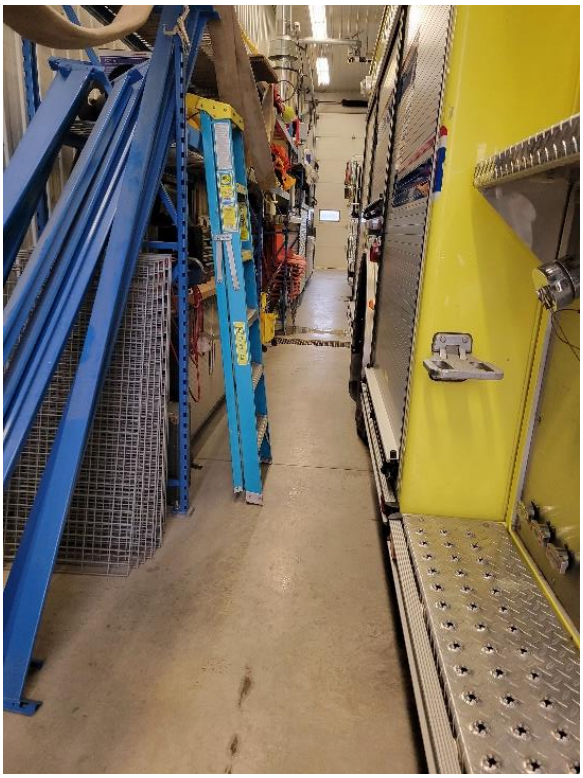


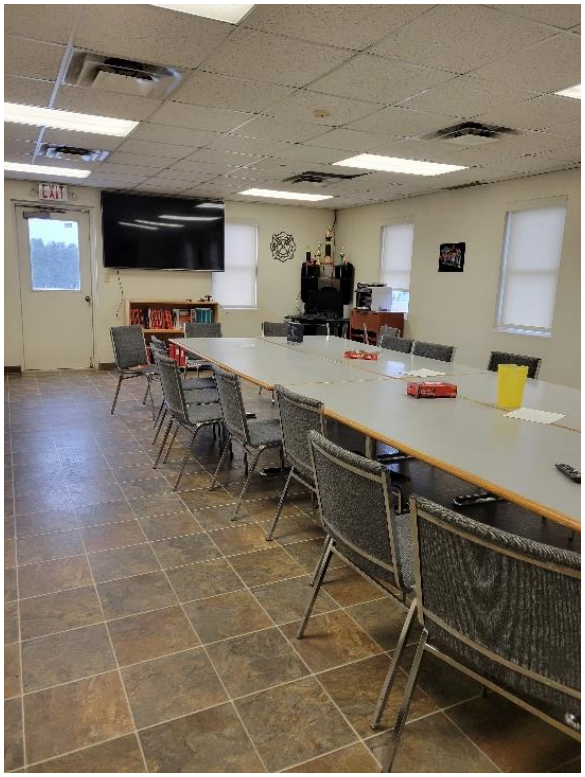
Granton Station					
Address:	511 Station Street, Granton, Ontario				
Bays:	2 tandem drive-thru bays	Unit Capacity:	4	Year in Service:	1994
Comments:	Single station for Granton, this station serves as the hub for all apparatus, operations, and response personnel. This fire station was built in 1994 and remains functional for present anticipated future use. Maintenance of this facility is the responsibility of the municipality.				
Unit Inventory:	1 Rescue	1 pumper		2 Tankers	

Granton Station

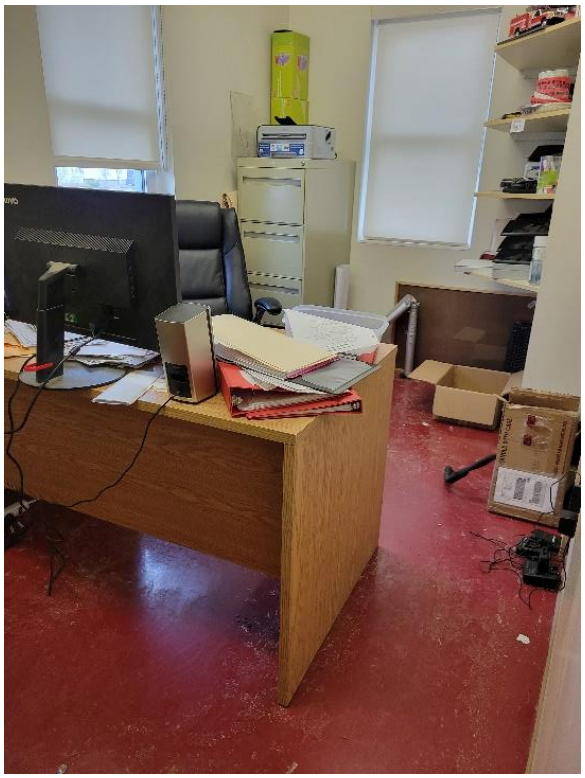


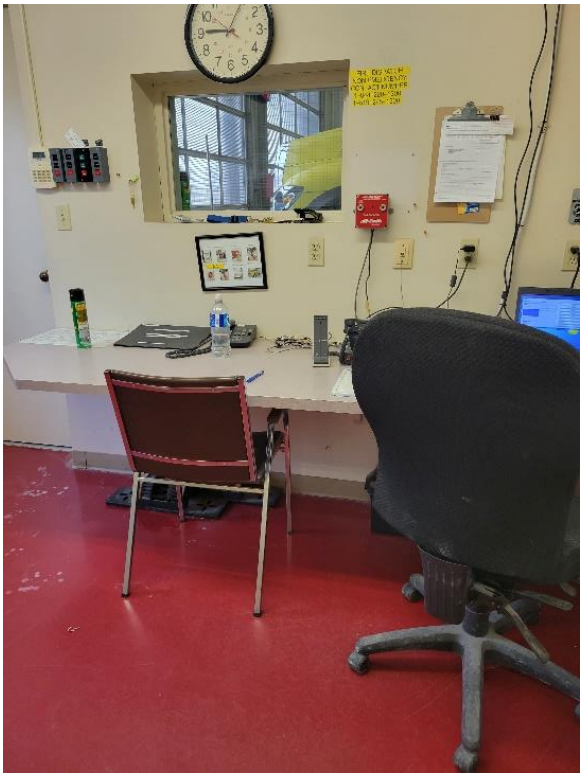
Granton Station





Granton Station





Observation #14: As per the Community Risk Assessment residential occupancies represent 73.84% of the township's existing property stock and presents the highest fire risk. Residential fires occur annually and account for the second highest fire loss category. Although there have no fatalities reported in the township between 2018 -2022, province statistics identify 87.25% of fatalities occur in Group C – Residential occupancies during this same period.

Further it was identified that 49.88% of the township's residential building stock was built prior to the introduction of the 1981 Ontario Fire Code. This could indicate that almost 50% of the residential buildings likely do not have wired interconnected smoke alarms creating a greater risk for early detection and early notification of fire. Seniors aged 65 and older represent over 15% of the total population with the greatest concentration of this group residing in rural areas.

Recommendation #24: Establish resources to develop, implement and measure fire and life safety education programs identified in the Community Risk Assessment.

(Suggested completion: 12-24 months)

Rational: *The Fire Protection and Prevention Act requires a municipality to establish a program for fire protection services which must include public education with respect to fire safety and certain components of fire prevention. Provincially, the number of preventable fire deaths are increasing, and evidence shows that the majority of these fires are occurring in residents with the lack of working smoke alarms. A robust and targeted fire education program will help shape and adjust behaviour of all risk groups*

3.10 Equipment

3.10.1 Apparatus and Emergency Vehicles

Fire apparatus and emergency vehicles are typically the largest asset expenditures for any fire department. Purchasing and managing these assets requires strong fiscal responsibility to endure public and local government scrutiny. Currently, LBFS has considerable dollars invested in vehicles and equipment. The lifespan of apparatus varies depending on its type and use, along with regular maintenance and testing standards. Fire services typically designate a lifecycle to each piece of apparatus and other emergency vehicles and contribute to a capital reserve fund to ensure enough funds are available when the replacement is needed.

3.10.2 Apparatus and Emergency Vehicle Fleet Inventory

LBFS owns and maintains, seven heavy apparatus (two engines/pumpers, three tankers, and two rescues). Each piece of apparatus has specific roles in anticipation of the risks in each response zone. The Lucan fire station houses one engine, two tankers and one rescue, Granton fire station houses two tankers and one rescue. These apparatuses are supported by similar types of apparatus deployed out of mutual aid fire departments when requested.

Given the geographical size and diverse demand zones in the township, including the designated response area, our opinion would be to maintain two engine/pumpers. Whether you maintain two stations or a single station service delivery having two pumpers provides fleet depth to manage unserviceability and/or maintenance requirements. In addition, two engine/pumpers also increase water delivery capacity and the ability to relay water from the tankers.

One noted gap is the absence of an elevated platform or aerial ladder truck in the LBFS apparatus inventory and depend on one being available when requested from one of the mutual aid partners for a fee. A needs assessment recommendation to add an aerial apparatus is included in the report. *(See Recommendation 10, Page 52)*

The LBFS inventory of apparatus and equipment appears to be well maintained. LBFS places their apparatus in each station based on anticipated needs.

Lucan Fire Station			
			
Unit Number:	**Engine**	Unit Number:	**Rescue**
Year/Make:	2006 Rosenbauer	Year/Make:	2003 American Lafrance
Type:	Engine / Diesel	Type:	Engine / Diesel
Odometer (kms.):	15916 km	Odometer (kms.):	13849 km
Pump Capacity:	1050 gal @ 150 lbs	Pump Capacity:	NA
Tank Capacity: (Water)	1000 IMP (Water)	Tank Capacity: (water)	NA
Foam Capacity:	20 imp	Foam Capacity:	NA
Delivery Method:	FOAM PRO	Delivery Method:	
Usage:	Front line support engine for fires, alarms, MVC and rescues etc.	Usage:	Front line Rescue, Light tower, SCBA fill station, Rescue tools equipment and medical supplies including defibrillator unit.

Lucan Fire Station	
	
Unit Number:	**Tanker**
Year/Make:	**2017 Metalfab**
Type:	Engine/ Diesel
Odometer (kms.):	9154 km
Pump Capacity:	420 gal @ 150 lbs
Tank Capacity: (Water)	1830 imp gal (water)
Foam Capacity:	NA
Delivery Method:	NA
Usage:	Water Shuttle

Granton Fire Station			
			
Unit Number:	**Pumper1**	Unit Number:	**Rescue 1**
Year/Make:	2001 Freightliner	Year/Make:	2014 International
Type:	Engine / Diesel	Type:	Engine / Diesel
Odometer (kms.):	22137	Odometer (kms.):	9114
Pump Capacity:	1000 GPM	Pump Capacity:	NA
Tank Capacity: (Water)	800 IMP (Water)	Tank Capacity: (water)	NA
Foam Capacity:	20 USG	Foam Capacity:	NA
Delivery Method:	Induction	Delivery Method:	NA
Usage:	Front line support engine for fires, alarms, MVC, rescues and medical aid etc.	Usage:	Front line support Rescue for fires, alarms, MVC, rescues and medical aid, rehab, ventilation, tools, etc.

Granton Fire Station			
			
Unit Number:	**Tanker1**	Unit Number:	**Tanker 2**
Year/Make:	2010 International	Year/Make:	2009 Freightliner
Type:	Engine / Diesel	Type:	Engine / Diesel
Odometer (kms.):	17730	Odometer (kms.):	251072
Pump Capacity:	350 GPM	Pump Capacity:	Portable Pump
Tank Capacity: (Water)	1000 USG (Water)	Tank Capacity: (water)	1500 USG
Foam Capacity:	20 USG	Foam Capacity:	None
Delivery Method:	induction	Delivery Method:	None
Usage:	Front line support engine for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.	Usage:	Front line support tanker for water supply either nursing, water shuttle or drafting operations, MVC safety fend off.

The Granton Station is primarily a rural operation with limited water supply from a distribution system and hydrants. They currently have the use of two tankers to maintain operational depth and readiness.

Under the current operational structure maintaining the second tanker has proven to be a cost-effective operational enhancement to Granton and its mutual aid partners. This includes:

- Having the ability to utilize both tankers on MVC responses by providing traffic and scene control.
- Having immediate water on scene at a structure or vehicle fire is a critical component for a large rural response area with limited available hydrants.
- Allowing the pumper and rescue apparatus to respond and deploy the necessary medical and extrication tools safely at the accident scene.
- Allowing one tanker to remain in full service when a mutual aid request for a tanker is made.
- Availability to have a tanker should the other be down for maintenance or repair.

In our opinion, the data and information provided not identify the second tanker as a critical requirement. However, this tanker has enhanced the Lucan Station's response capabilities and should remain in service until the following factors have been addressed or decided upon:

- Contractual obligation for the Perth South demand zone fire protection requirements
- Development of the recommended service delivery policy for all demand zones.
- Revision of the establishing bylaw to include governance and administrative structures, and formalized core services.
- Potential for the Township to pursue a Fire Underwriters Survey superior tanker shuttle accreditation.[14]

3.10.3 NFPA Standards for Fire Apparatus

NFPA has developed standards to assist a fire service with the design, maintenance, inspection, testing, life cycling, and dispersal for their fire apparatus. Fire departments may choose to adopt these standards or utilize them as a reference in their own standards and practices.

NFPA 1901: Standard for Automotive Fire Apparatus

The NFPA 1901 standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of hazardous conditions. This standard recommends that fire apparatus should respond to first alarms for the first 15 years of service, with the expectation that they perform as designed 95% of the time. For the next five years, it should be held in reserve for use at large fires or used as a temporary replacement for out of service first line apparatus.

NFPA 1911: Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Emergency Vehicles.

The NFPA 1911 standard defines the minimum requirements for establishing an inspection, maintenance, and testing program. Also included are guidelines for emergency vehicle refurbishment and retirement.

The Underwriters Laboratory of Canada utilizes many of the provisions within these NFPA standards which are referenced by Fire Underwriters Survey (FUS) for determining fire insurance ratings for a community. For example, it follows the life cycle program with the exception that it may award full credit for a fire apparatus older than 15 years, but not more than 20 years, in remote locations only if the piece of equipment is deemed in excellent condition and all necessary upgrades are done. The value of the additional credit in this case which is only a portion of the total grading for a final FUS rating may well be overshadowed by the cost of maintaining an older unit.

[14] *https://fireunderwriters.ca/grading/superior-tanker-shuttle-service.html*

In addition, the NFPA 1901: Standard for Automotive Fire Apparatus recommends the following:

D.1 General

To maximize firefighter capabilities and minimize risk of injuries, it is important that fire apparatuses be equipped with the latest safety features and operating capabilities.

In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatuses more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine-tuning to NFPA 1901 have been truly significant, especially in safety, fire departments should seriously consider the value (or risk) to firefighters of keeping fire apparatus more than 15 years old in first line service. It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA 1912; and incorporate as many features as possible of the current fire apparatus standard (See Section D3 of Standard). This will ensure that, while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the firefighters who use the apparatus. Apparatuses that were not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

Underwriters Laboratories of Canada

Current Underwriters Laboratories of Canada (ULC[15]) and NFPA 1901: Standard for Automobile Firefighting Apparatus Standards recommend using apparatus on the front line for up to 15 years, then as a backup for another four to five years. Of course, this timeline is dependent on the frequency of use, scheduled maintenance, and budgets. As indicated in Table 14, some emergency vehicles life cycles can be extended due to low usage or serviceable condition. A leading practice is to have a complete condition survey conducted to determine if there is usable life cycle remaining. This condition survey must consider the NPFA and FUS standards along with the maintenance and cost records of the respective vehicle.

[15] *Underwriters Laboratories of Canada (ULC) is an independent product safety testing, certification, and inspection organization. www.canada.ul.com*

Table 14: Fire Apparatus Service Schedule (Fire Insurance Grading)

Apparatus Age (Yrs.)	Major Cities [3]	Medium Sized Cities [4]	Small Communities[5] and Rural Centres
0 – 15	First Line Duty	First Line Duty	First Line Duty
16-20	Reserve	2nd Line Duty	First Line Duty
20-25[1]	No Credit in Grading	No Credit in Grading or Reserve[2]	No Credit in Grading or 2nd Line Duty[2]
26-29[1]	No Credit in Grading	No Credit in Grading or Reserve[2]	No Credit in Grading or Reserve[2]
30+	No Credit in Grading	No Credit in Grading	No Credit in Grading

[1]All listed fire apparatus 20 years of age and older are required to be service tested by recognized testing agency on an annual basis to be eligible for grading recognition (NFPA 1071).

[2]Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable, and apparatus successfully passes required testing.

[3]Major Cities are defined as an incorporated or unincorporated community that has:

- *a populated area (or multiple areas) with a density of at least 400 people per square kilometer; AND*
- *a total population of 100,000 or greater.*

[4]Medium Communities are defined as an incorporated or unincorporated community that has:

- *a populated area (or multiple areas) with a density of at least 200 people per square kilometer; and/or*
- *a total population of 1,000 or greater.*

[5]Small Communities are defined as an incorporated or unincorporated community that has:

- *no populated areas with densities that exceed 200 people per square kilometer; AND*
- *does not have a total population more than 1,000.*

3.10.4 Fire Apparatus Design and Procurement

Fire apparatus is designed and tendered based on the unique requirements of the fire service and the community needs that it serves. With the design, tender and procurement processes typically taking two to three years or longer as well as with the expected life cycles of these apparatus of 20 years or more, it is important that the initial decisions accurately reflect the immediate needs and those in the future.

LBFS reviews current apparatus records and seeks input from station officers or ad hoc apparatus committees for establishing the requirements of current and future apparatus. Together with input from municipal finance, LBFS Fire Chiefs develop specifications for replacement apparatus for tender. Future apparatus size will be constrained in size and capacity because of limitations of apparatus bay dimensions in the fire stations.

3.10.5 Fire Apparatus Maintenance and Repair

In Ontario, all fire apparatus with a gross weight, registered gross weight, or manufacturers gross vehicle weight rating exceeding 4500 kilograms must be inspected on an annual basis in accordance with regulations made under the Highway Traffic Act. These vehicles are required to display an inspection sticker as evidence of compliance with this requirement.

Daily driver inspections for commercial vehicles are a requirement under the Act. Fire vehicles are not included in this requirement, however most fire departments in Ontario mandate daily inspections either at the beginning of a shift, or post-trip at a minimum.

A sound and reliable preventative maintenance program is a vital component of the overall fleet management process ensuring each piece operates reliably in the way it was intended safely and effectively while assisting in making it to the anticipated life cycle. Poor maintenance scheduling or neglect on required checks and repairs can lead to accidents, breakdowns, and life safety issues. A fire apparatus pre-maintenance program should consist of the flowing components:

- Trip inspections (daily, pre-trip, post trip)
- Regular preventative maintenance scheduling
- Annual preventative maintenance comprehensive check

The maintenance and repair of all LBFS apparatus is handled through private vendors. Basic vehicle maintenance is performed by a local mechanical repair shop. Required speciality testing, certifications and repairs are handled through contract by a third-party vendor utilizing fire industry emergency vehicle technicians.

Daily inspection sheets and post trip inspections are reviewed to ensure any necessary repairs are made as soon as possible. Recommended service schedules, testing and certifications are coordinated with LBFS administration to ensure compliance with as little disruption to service as possible.

3.10.6 Fire Apparatus Replacement and Dispersal

LBFS has been making a conscious attempt to extend the life of their apparatus. A list of all apparatus and their anticipated replacement dates has been developed and maintained. The majority of LBFS apparatus have a target replacement date of twenty-five years. The fire chief, together with municipal partners have established a fire equipment and vehicle reserve fund for anticipated apparatus replacement. The next apparatus scheduled to be replaced under this schedule is 2025.

There are several assumptions that should form the criteria for fire apparatus replacement. This process for determining the appropriate dollar value required to be placed in a reserve fund to ensure sufficient monies are available at the time of replacement is based on the identified life cycle, forecasted inflation, depreciation, and salvage value of current assets. Calculating the yearly contributions is based on the number of years of expected life in the

fleet inventory. Although both NFPA and FUS have criteria on re-classifying or retiring apparatus, modifications or upgrades may be required based on age or heavy usage.

For example:

- Engines: 16-20 years frontline (FUS & NFPA), but can be reduced due to high usage
- Rescue Truck: 15 years frontline (NFPA) but can be reduced due to high usage.

Replacement lifecycles for LBFS vehicles are not consistent with lifecycles recommended by NFPA 1901 and the FUS body reporting to the Canadian General Insurance. For example (as detailed in Table 15) first line apparatus are to be utilized for up to 15 years and then serve as a backup, or in reserve capacity for up to five additional years. LBFS heavy apparatus have a planned life cycle of 25 plus years with no defined reserve status.

In review of current apparatus, a study of the original purchase price minus market depreciation is compared to the anticipated replacement cost, taking into consideration the trend in inflationary increases. The salvage or trade-in value of the original apparatus can be estimated based on industry trends. This value is subject to several considerations including:

- Age of the vehicle
- Kilometers
- General condition
- Certifications
- Annual test results

Through careful analysis the optimal replacement year can be determined. The table below shows an example of an apparatus purchased in 2007 with a 25-year replacement timeline. Assumptions need to be determined for a particular piece of apparatus to consider the type of factors above, as well as the type of requirements for the replacement apparatus to meet the needs for the next 20 plus years. Annual reserve contributions should be made to ensure sufficient funds are available at the time of anticipated replacement.

Table 15: Fire Apparatus Life Cycle Cost Projection Example

Vehicle	Year	Replacement cost based on 6.5% increase per year	Difference between original and replacement	Depreciated value
1	2007	$240,000.00	$0.00	$240,000.00
2	2008	$255,840.00	$15,840.00	$223,200.00
3	2009	$272,725.44	$32,725.44	$207,576.00
4	2010	$290,725.32	$50,725.32	$193,045.68
5	2011	$309,913.19	$69,913.19	$179,532.48
6	2012	$330,367.46	$90,367.46	$166,965.21
7	2013	$352,171.71	$112,171.71	$155,277.64
8	2014	$375,415.05	$135,415.05	$144,408.21
9	2015	$400,192.44	$160,192.44	$134,299.63
10	2016	$426,605.14	$186,605.14	$124,898.66
11	2017	$454,761.08	$214,761.08	$116,155.75
12	2018	$484,775.31	$244,775.31	$108,024.85
13	2019	$516,770.48	$276,770.48	$100,463.11
14	2020	$550,877.33	$310,877.33	$93,430.69
15	2021	$587,235.24	$347,235.24	$86,890.55
16	2022	$625,992.76	$385,992.76	$69,512.44
17	2023	$667,308.28	$427,308.28	$55,609.95
18	2024	$711,350.63	$471,350.63	$44,487.96
19	2025	$758,299.77	$518,299.77	$35,590.37
20	2026	$808,347.56	$568,347.56	$28,472.29
21	2027	$861,698.50	$621,698.50	$22,777.84
22	2028	$918,570.60	$678,570.60	$18,222.27
23	2029	$979,196.26	$739,196.26	$14,577.81
24	2030	$1,043,823.21	$803,823.21	$11,662.25
25	2031	$1,112,715.54	$872,715.54	$9,329.80
26	2032	$1,186,154.77	$946,154.77	$7,463.84

Figure 9: Fire Apparatus Life Cycle Cost Projection Example

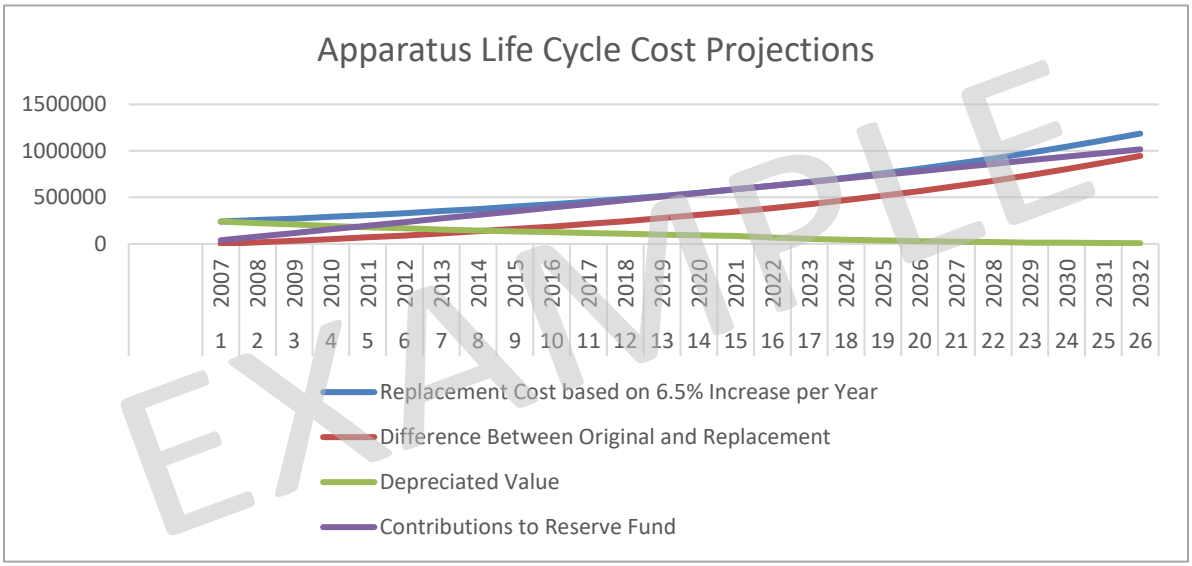


Table 16 and Figure 9 show that the monies put into the replacement reserve fund are close to the projected replacement cost in year 15 and require additional contributions to extend past. Note the following key points:

- Five-year increase to replacement cost from 15-20 years = $182,533
- Five-year decrease in depreciation value from 15-20 years = $58,415
- Total increased costs to retain apparatus for additional 5 years (15-20) = $240,948
- Additional contributions to reserve fund $195,500
- Difference between 15 and 20 years is $240,948 - $195,500 =$45,448 or an additional $9,090 of contribution per year
- Changing from a 15 to 20-year replacement cycle requires $1,818 per year more from year.

A fire service that utilizes a similar process as above, taking into consideration local conditions to determine the optimal replacement time for each major piece of apparatus will be able to accurately ensure sufficient funds are available when required. Further, the development of a comprehensive reserve fund process that accounts for an established life cycle criteria for each unit and the ideal replacement timelines is recommended. A yearly review of this plan should be undertaken to evaluate whether the schedule remains on track. Necessary adjustments to individual apparatus or emergency vehicles can be made at that time.

Given the nature of emergency services and the reliance on safe and dependable equipment and vehicles, the need for regular and a critical review of these assets is important to determine if the intended life cycle is both achievable and financially responsible. In addition to maintaining a current fleet capable of providing reliably service, meeting insurance (ULC) guidelines favourably impacts municipal insurance ratings. While the life expectancy of any piece of equipment or vehicle is contingent on proper use, maintenance and repair, fire apparatus life cycles are subject to adjustments more frequently than normal service

vehicles. Annual reviews of all apparatus in LBFS, including mileage, call volume, maintenance records, testing results and salvage values should be carefully done with subsequent adjustments to the original life cycle, whether reduced or extended as warranted.

Table 16: LBFS Apparatus and Planned Life Cycle

Fire Station Location	Unit	Year built	In-service Year	Est. life expectancy	Estimated replacement year
Lucan	Engine Rosenbauer	2006	2007	20 years	2026
Lucan	Rescue American Lafrance	2003	2012	25-30 years	2030 Running gear only
Lucan	Tanker Metalfab	2017	2018	25 years	2043
Granton	Pump 1 Freightliner	2001	2001	25 years	2026
Granton	Rescue 1 International	2014	2014	25 years	2040
Granton	Tanker 1 International	2017	2017	25 years	2042
Granton	Tanker 2 Freightliner	2009	2016	30 years	2040

Observation #15: Both LBFS fire stations are well maintained, clean and kept tidy. Each station was constructed and/or refurbished to meet the needs of the fire service of the time. However, both the Lucan and Granton fire stations are at maximum capacity, with little to no growth potential within their current footprints. The present size of the apparatus bays constrains future apparatus length and height without requiring significant renovations. This issue is of particular concern should the LBFS require an aerial device.

Recommendation #15: Undertake a complete condition and functional assessment of both fire stations to support LBFS' core services and determine the long-term life cycle of these capital assets.

(Suggested completion: 36-60 months)

Rationale: *Conducting a facility assessment at each of the two fire stations will assist to determine and plan whether status quo, replacement, refurbishment, re-location, or closure is the most prudent approach to managing the current and future fire department needs of the municipality. Together with the future growth projections in each of the fire station response zones this fire station functional analysis typically focuses on the following:*

- *Sufficient apparatus bay to safely and effectively garage and maneuver emergency response vehicles and apparatus.*
- *Firefighter staging and personal protective equipment storage.*
- *Equipment storage, maintenance, and decontamination areas*
- *Training and fitness area*

Staff support areas such as workstations, offices, kitchen, rest areas, washrooms, and showers (non-gender or gender specific).

3.11 Ancillary Equipment

Equipment needed for field response operations typically carried on each apparatus include vehicle extrication tools, various hand tools, axes, pry tool, portable lighting, and blowers, etc.

Results of the interviews and surveys indicate that most are current and appropriate for the needs of LBFS. The LBFS ancillary equipment is designed and maintained to meet the department's current core service, goals, and objectives. As the response needs or emergency services offered change or grow, additional equipment to match the service must be considered.

3.12 Personal Protective Equipment

LBFS personnel are supplied with NFPA, NIOSH and CSA approved personal protective equipment (PPE) including turnout (bunker gear), gloves, helmets, boots and any specialized gear for specific rescue and EMS operations. LBFS has a strict cleaning and maintenance program in compliance with NFPA 1971: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting for the health and safety of their firefighters.

Regular gross decontamination and cleaning is performed at each fire station and annual inspection, cleaning and repair are done by a certified independent service provider.

Observation #16: There is an established apparatus and emergency vehicle replacement schedule and reserve fund. This schedule anticipates the retirement of most apparatus and emergency vehicles at 25 years. Financial resources are set aside in their fire equipment and apparatus reserve fund in anticipation of upcoming replacements. It has not been determined whether this fund is sufficient to meet the life cycle replacement needs of the fire service.

Recommendation #16: Conduct a comprehensive internal study of the reserve fund process of fire equipment and emergency vehicle to meet life cycle requirements and update as required.

(Suggested completion: 12-18 months)

Rationale: *Fire apparatus is routinely utilized under extreme conditions for long periods of time. The reliability of these critical pieces of equipment cannot be suspect. As stipulated in NFPA 1901, frontline apparatus is required to maintain a 95% in service status.*

Updating all apparatus and emergency vehicle replacement schedules will assist with ensuring sufficient timelines for replacement process and necessary funds are there when needed.

3.13 Specialized Operations Equipment

Effective and efficient response to an incident requires equipment designed for a specific purpose. LBFS requires specialized equipment to incidents involving motor vehicles, HAZMAT/Dangerous Goods incidents, low slope rope rescue, shore-based ice, and water rescue as well as wildland interface fires. This equipment is typically kept on the apparatus or in-station in anticipation of the known risks in each response zone.

Interview and survey results have indicated that the equipment inventory currently meets the goals and objectives of the department, however, may need upgrading or replacement based on usage or change in response risks for any given response zone.

3.14 Asset and Records Management

In some municipalities, the municipal corporation manages fire and emergency services assets to take advantage of synergies with other fleet and facilities management programs. The Lucan Biddulph municipality has developed and maintained a commercial asset management software program. LBFS utilizes this process throughout the two fire stations and is meeting their present needs.

The records management in the LBFS is typically done on spreadsheets. The Fire Chiefs are exploring commercial applications for records management that would meet the needs of their services.

Observation #17: Survey results have indicated that there is confidence in the PPE that is issued to each firefighter. Proper cleaning and repair processes are in place in both fire stations. However, there was concern expressed that firefighters are required to share face pieces for the SCBA. Industry best practices suggest issuing individual face pieces to firefighters that are properly sized and fitted are an important measure for firefighter safety.

Recommendation #17: Provide individual SCBA face pieces to each firefighter in the LBFS.

(Suggested completion: 12-24 months)

Rationale: *Proper fitting face pieces are an important health and safety measure that must be done. Recurring face piece fittings are to be confirmed annually through proper testing protocols.*

3.15 Municipal Comparative Analysis

Comparing the Township of Lucan Biddulph to similar municipalities is an effective way to identify relative service levels, costs, and trends. It must be noted that all communities have different attributes such as risk factors, historical decisions, and community profiles. For this reason, the comparative community analysis should be used as a base reference, not a suggestion or intention of something to be replicated in Lucan Biddulph. These benchmarks include budgets, service areas, service levels, and staffing levels.

Although fire and emergency services have the same goal of protecting life and property, each community has its unique features in how to accomplish those goals. For the purposes of this analysis, we used 2018-2022 information to obtain common information from each community. Therefore, there are no ideal or identical comparators for Lucan Biddulph. Our main criteria for collecting information were:

- Population
- Budgets
- Department size and staffing
- Type (full-time, part-time, composite or combination)

Additionally, the following information was reviewed:

- Number of fire stations
- Call volume and type

Additionally, the following information was reviewed:

- Number of fire stations
- Call volume
- Call types

3.15.1 Participating Communities

Table 17: Participating Community Comparatives

Community	Township of Lucan Biddulph	Municipality of North Middlesex	Municipality of Plympton-Wyoming	Town of Petrolia
Population	5832	6841	8850	6129
Land Area (km^2)	65.31	598	318.8	350.1
Area of Response (km^2)	458.35 (Incl. Perth South)	598	318.8	350.1

3.15.2 Department Profile

Department profile, staffing models and levels of service are based on community risk, risk tolerance and the ability for a community to pay for and sustain desired service levels.

Table 18: Community Comparative Departments' Profile

Community	Township of Lucan Biddulph		Municipality of North Middlesex	Municipality of Plympton-Wyoming	Town of Petrolia
	Lucan	Granton			
Department Type	Paid on Call		Paid of Call	Paid on Call	Volunteer
No. of Stations	1	1	2	2	1
Total Staff	24	24	50	61	48
Fire Chief	1 POC	1 POC	1 FT	1 FT	1 POC
Deputy Chief	1 POC	1 POC	0	2 FT	0
Assistant Chief (FT)	0	0	0	0	0
Support Staff (FT)	1	1	0	1	0
Suppression Staff	24	24	50	58	30
Fire Prevention Staff	2	1	0	0	0
Public Education	0	0	0	0	0
Training Staff	2	4	0	0	0
Dispatch	0	0	0	0	0
Mechanical	0	0	0	0	0
Other	0	0	0	0	18
FT - Full-time PT - Part-time POC - Paid-On-Call	Composite – Combination of two or more of Fulltime/ Part time/ Paid-On-Call/ Auxiliary				

3.15.3 Budgets

Department budgets are of specific concern to most communities. In some instances, budgeting for fire and emergency services make up a considerable portion of a community's operating budget. We evaluated the budgets for each community, and it is important to note that each is unique in how each municipality allocates their budgets.

Table 19: Community Comparative Budget Ranking

Community	Township of Lucan Biddulph	Municipality of North Middlesex	Municipality of Plympton-Wyoming	Town of Petrolia
Municipal Budget 2021/22	$7,209,713	$8,090,779	$23,429,919	$5,865,497
Emergency Services Operating Budget	$328,160	$1,072,723	$729,993	$251,489
% of Municipal Budget	4.6%	13.26%	3.1%	4.29%
Population	5,832	6,841	8,850	6,129
Cost Per Capita	$56.27	$156.80	$82.48	$41.03
Lucan Biddulph Per Capita Net Expenditure Fire: $56.27				
Mean/Average Per Capita Net Expenditure Fire: $84.14				

3.15.4 Industry Standards

Table 20: Level of Service

Community	Township of Lucan Biddulph	Municipality of North Middlesex	Municipality of Plympton-Wyoming	Town of Petrolia
Level of Service (approved by Council)	No	No	Yes	Yes
Is the Level of Service based on a leading practice such as NFPA 1710/ 1720 and/or the Ontario OHS Regulations for firefighters?	No	No	Yes	Yes

3.15.5 Response Data

For the purposes of this study, we used 2018–2022 information to get common information from each community. Breakdowns are divided into the two following categories:

Table 21:Examples of Incident Types for Statistical Analysis

INCIDENTS BY TYPE		
EMS Related Calls		
Call Types	Pre-Hospital Care: Alpha, Bravo Charlie Delta Echo	
	Lift Assist	
	False Alarms	
Fire-Related Calls		
Fire Emergency	Alarm Burning Complaint Structure Fire Minor Fire Smoke	Car Fire Re-check Wildfire – Grass, Brush, Outdoor Oven/Pot on Stove Explosion
MVI (Motor Vehicle Incident), aka MVC (Motor Vehicle Collision)	Extrication	No Extrication
Rescue	Stalled Elevator Lake/Marine Rescue High Angle	Swift Water Building Collapse Ice
Hazmat/Dangerous Good	Highway Incident Rail Incident	Industrial Incident Resident Incident
Non-Emergency	Carbon Monoxide Gas/Oil Smell/Spill Power/Telephone/Cable Line Down Natural Gas Leak	Aircraft Standby Incident Bomb Threat Hazardous Materials Propane Leak/Smell
Other	Inspection Burning Pile Inspection Assist Other Agency Public Service	Needle Pick-up Flood Assessment Water Problem (in structure)

Note: *Description and category names may not be common terminology in all jurisdictions.*

Table 22: Municipal Comparative Response Call Volume

Community		Township of Lucan Biddulph	Municipality of North Middlesex	Municipality of Plympton-Wyoming	Town of Petrolia
Total Call Volume	2018	83	118	117	143
	2019	74	103	123	142
	2020	84	96	106	131
	2021	108	113	108	146
	2022	138	144	109	157
Fire Related Calls	2018	81	96	84	114
	2019	68	81	82	112
	2020	78	75	86	105
	2021	105	93	81	124
	2022	125	107	83	137
EMS Related Calls	2018	2	30	33	29
	2019	6	22	41	30
	2020	6	21	20	26
	2021	3	20	27	22
	2022	13	24	26	20

There is no standard for categorizing incidents so it must be understood that these statistics are broadly based and are only general reference when comparing fire departments. The community comparative analysis can only be interpreted from an indirect basic level due the disparity from each of the surveyed communities' organizational structure, core services and levels, emergency response categorization, and financial systems. Direct comparison is strongly discouraged.

What can be determined from this information is that LBFS is the second lowest per-capita costs compared to the median of the participating municipalities. Furthermore, the LBFS staffing levels and related costs are the lowest of the participating municipalities.

SECTION 4
INCIDENT STATISTICS AND RESPONSE PERFORMANCE

4.1 Industry Standards and Provincial Legislation

The following section provides an overview of relevant industry standards and provincial legislation with respect to fire department response performance in Ontario. This section also includes a detailed analysis of the trends in incident types occurring within the Township of Lucan Biddulph fire protection demand zones and the associated response performance.

4.1.1 National Fire Protection Association (NFPA) Standards

The most widely accepted standards for the fire service are developed by the National Fire Protection Agency (NFPA). Established in 1986, "the NFPA is a self-funded non-profit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards (NFPA, 2021)." The NFPA has developed over 300 consensus-based codes and standards designed to improve fire department effectiveness and firefighter safety. NFPA research is applied in establishing industry benchmarks for fire department operations, training, and equipment. Many of these standards form the basis of and are referenced throughout the Ontario Fire Protection and Prevention Act, 1997 and related firefighting regulations and guidelines the Ontario Occupational Health and Safety Act, R.S.O. 1990.

The NFPA has done considerable research in developing standards and ensuring they reflect the primary value of life-safety in emergency response for responders and victims. The NFPA standard identifying firefighting operations and response performance objectives for paid-on-call departments such as LBFS is 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. This standard provides the framework for the fire department emergency response performance analysis and will be discussed in detail further in this section of this master plan.

Additionally, NFPA 1201: Standard for Providing Emergency Services to the Public outlines several practices in establishing and managing an effective and efficient fire service. It provides standards regarding governance, organizational structure, planning and resource deployment. It will be referenced throughout this section.

4.1.2 Ontario Regulatory Framework Regarding Community Fire Safety

Ontario municipalities are required to provide a public education and fire safety program but may or may not elect to do that by establishing a fire department. The *Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4* states the following:

"Municipal responsibilities

2(1) Every municipality shall,

(a) establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention; and

(b) provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.

Methods of providing services

(2) In discharging its responsibilities under subsection (1), a municipality shall,

(a) appoint a community fire safety officer or a community fire safety team; or

(b) establish a fire department."

In the event a fire department is established, municipalities are required to meet the numerous requirements regarding fire department equipment, training and certification standards identified in the regulations of this act and the *Occupational Health and Safety Act, R.S.O. 1990*. Many of these requirements are based on NFPA standards. However, municipalities are not required to provide specific services or meet the service level standards identified in NFPA 1720. The response time goals and the number of required firefighters to respond identified in NFPA 1720 are an industry leading practice but not mandated.

Establishing service types and associated service levels is the responsibility of the authority having jurisdiction (AHJ). For most municipalities, the AHJ is the municipal council. Formalizing service types and service levels in policy is also considered a best practice. Fire department service types and service levels are typically established to mitigate identified community risks. However, service levels should also be achievable and affordable.

The Centre for Public Safety Excellence and International Association of Fire Chiefs developed a standard of cover framework to support the process of establishing fire department service types and service levels. It is a comprehensive process to identifying community risks, assessing fire department capability, and establishing appropriate emergency response service levels to mitigate community risks. The outcome of this process results in a standard of cover policy including service level recommendations to be considered for approval by the AHJ. For the purpose of this master plan, the standard of cover is synonymous with service delivery policy as recommended at Section 2.

4.2 Incident Types and Frequency Analysis

Fire and rescue services typically have access to large amounts of incident and response data. Incident data can be used and reported for several purposes. Incident type and frequency data is used to analyze department activity levels and identify trends in demand for fire services. The breadth of services provided by the modern fire service is often surprising. Fire departments have evolved from responding primarily to fires to responding to a broad range of public service and emergency incidents and becoming a critical component of a community's social safety net.

Five years of response data provided by LBFS was analysed that includes all incidents from January 2018 to December 2022. Incident data is aggregated into broader categories and more specific incident categories. For example, all types of fire incidents including structural, vehicle and wildland/brush/garbage/cropland fires may be combined into a single category. This differentiation is made to provide varying levels of information as stakeholder reporting and information needs vary depending on their level of interest in LBFS activities.

LBFS stations respond to incidents within their demand zones (including Perth South), provide a second station response to concurrent or large incidents within the municipality and occasionally provide mutual aid outside of the Township of Lucan Biddulph. Table 23 identifies all unique incidents occurring during that timeframe. This analysis provides a general overview of the types of emergencies occurring and their respective frequency. It does not include counts of second station incidents as the incident is already captured in the initial response or mutual aid responses which are outside of the Township. These incident types will be discussed in further detail in this section.

Table 23: Unique Incidents within Township of Lucan Biddulph (2017 to 2021)

Incident Type	2018	2019	2020	2021	2022	**Total**	**%**
False Incidents	23	17	26	34	35	**134**	35
Motor Vehicle Collision	29	20	16	18	33	**116**	30
Fire	5	5	13	13	12	**48**	13
Public Hazard	8	6	9	11	14	**48**	13
Medical	1	5	6	3	12	**27**	7
Other Response	0	1	1	1	6	**10**	2
Total	66	54	71	80	112	383	100

The following observations regarding unique incidents within Lucan Biddulph were noted:

- False incidents were the highest grouping making up 35%.
    - The vast majority of these were related to alarm equipment malfunction (80 out of 134).
    - An additional 25 of false incidents were classified as cancelled on route.
- 30% of all incidents were motor vehicle collisions.
- Medical incidents accounted for a low percentage of responses in comparison to many fire services providing first medical response.
- Other Responses such as rescues (excluding vehicles) were infrequent.

Observation #18: LBFS does not have a comprehensive asset management program for all capital and operational inventory that tracks the history of each piece from purchase to disposal.

Recommendation #18: Procure a stand-alone asset management system for the fire service.

(Suggested completion 24-36 months)

Rationale: *Determining efficiencies and cost effectiveness while ensuring proper asset tracking and management will assist with ensuring LBFS has the necessary functional assets required to perform the roles expected of them.*

Figure 10 and 11 illustrates the locations where an address was able to be plotted on the map for the 5-year period within the Township of Lucan Biddulph.

Figure 10: Unique Incidents by Incident Type (2018 to 2022)

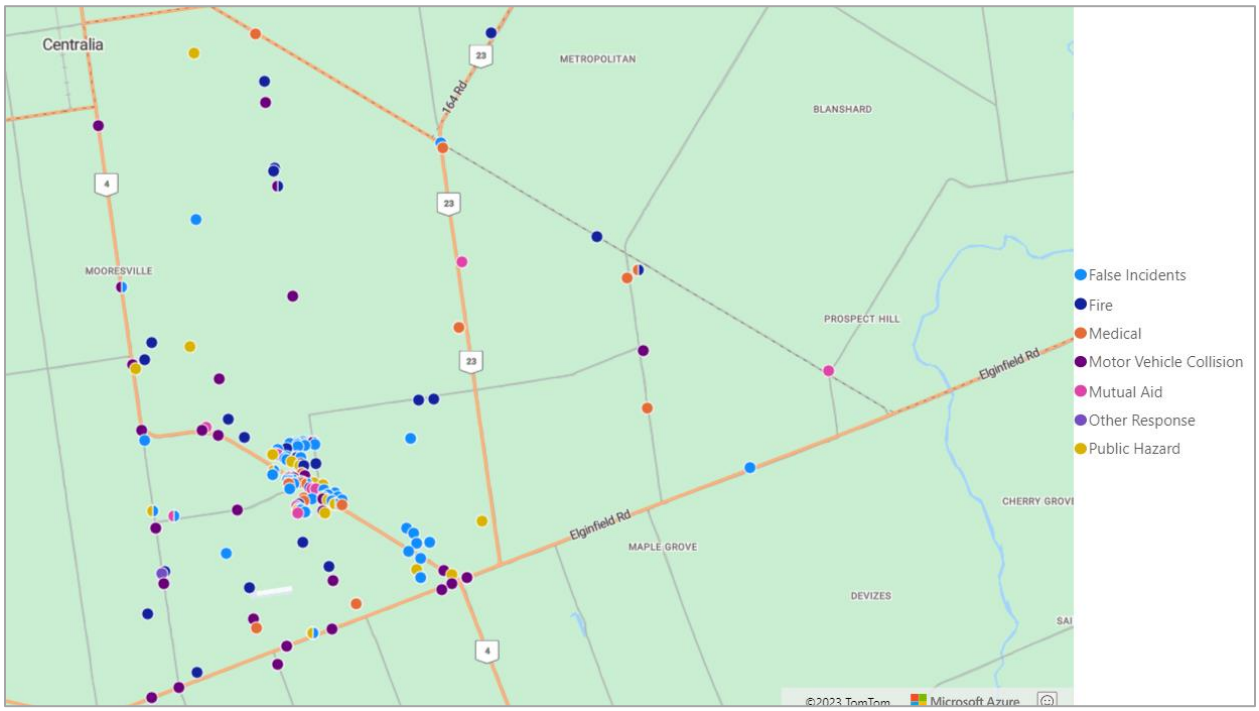


Figure 11: Unique Incidents by Incident Type (2018 to 2022) Zoomed in on the Village of Lucan

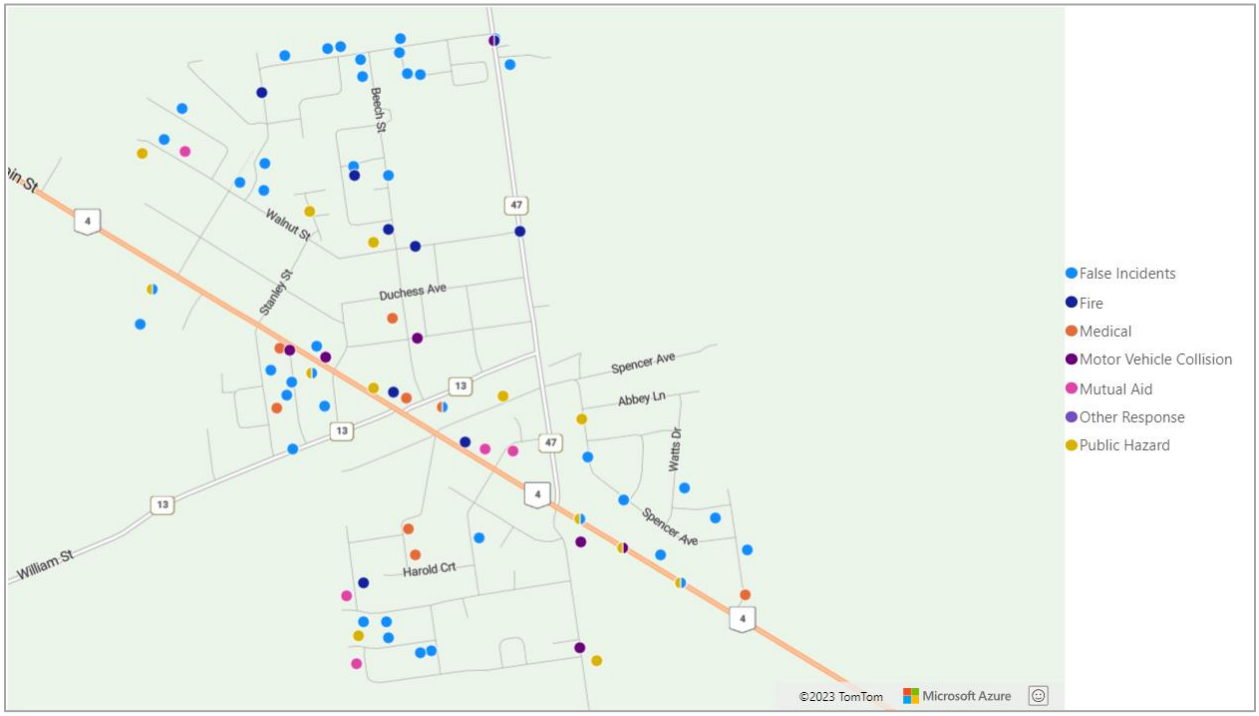
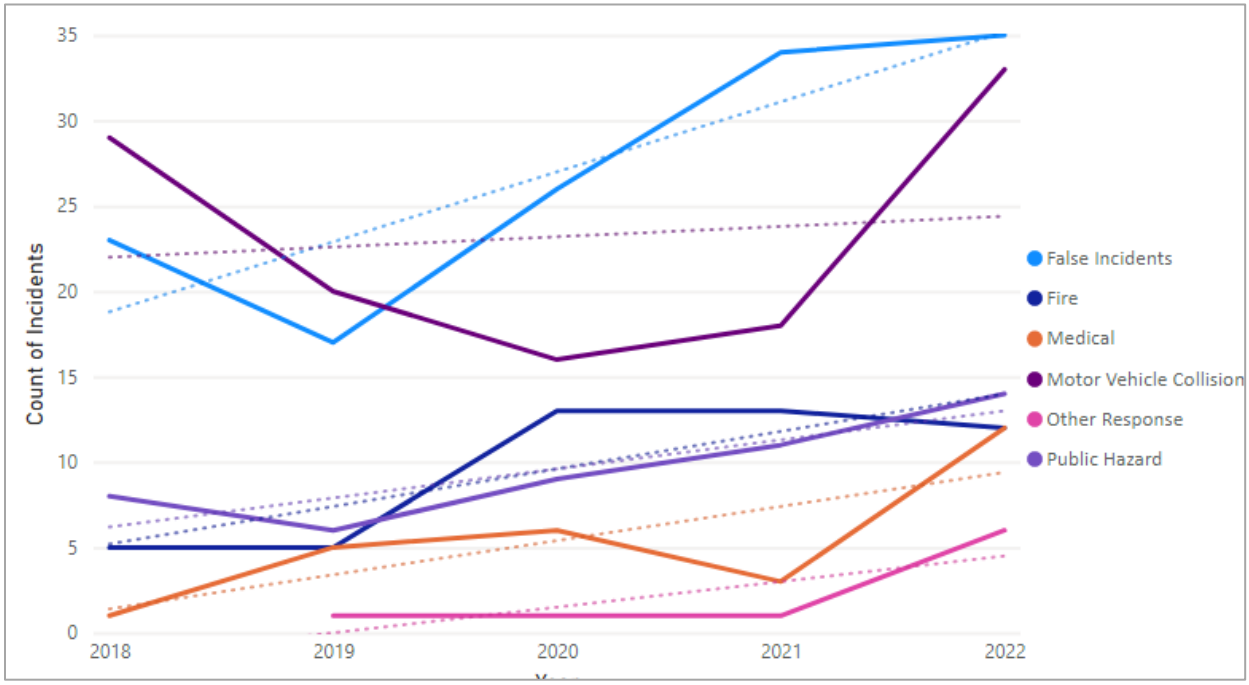


Figure 12 illustrates the general trends seen in the broad categories of unique incidents occurring in Lucan Biddulph during this period. This analysis is intended to draw attention to the incident categories that are changing rapidly. A positive trend (increasing) may forecast a future need for additional resources to respond to these incidents or new mitigation strategies to address this type of community risk. A negative trend (decreasing) may identify successful mitigation efforts or a decreasing risk resulting from other changes in the community risk profile.

Figure 12: Unique Incidents by Incident Type (2018 to 2022)



The following general trends regarding unique incidents within Lucan Biddulph were noted:

- False incidents are trending up over the last 5 years and increased the most over this period.
- Fire, Public Hazard, Medical, and Other Responses varied year over year but demonstrated positive trends overall.
- Motor Vehicle Collisions had been trending down until they increased in 2022 to the highest level with a slightly positive trend overall.

General or broad incident type categories can be broken out into subcategories of incident types to provide more specific information regarding community risks. For example, fire incidents may be categorized into specific fire types such as brush, structure fires, garbage fires or vehicle fires. This level of detail is useful in analyzing more specific trends in community risk and service requirements. It may also be useful in identifying the need for specific risk mitigation strategies such as increased property inspections, reduced speed limits or targeted public education.

Table 24 reflects all incident types in greater detail that occurred within the municipal boundaries Lucan Biddulph from 2018 to 2022. This dataset included mutual aid and second-station responses to reflect the response activity from both station's response perspective. It is useful to include these categories to acknowledge and reflect the additional demand on the fire response system these types of incidents create.

Table 24: All Incidents/Responses by Incident Subcategory Type in the Township of Lucan Biddulph

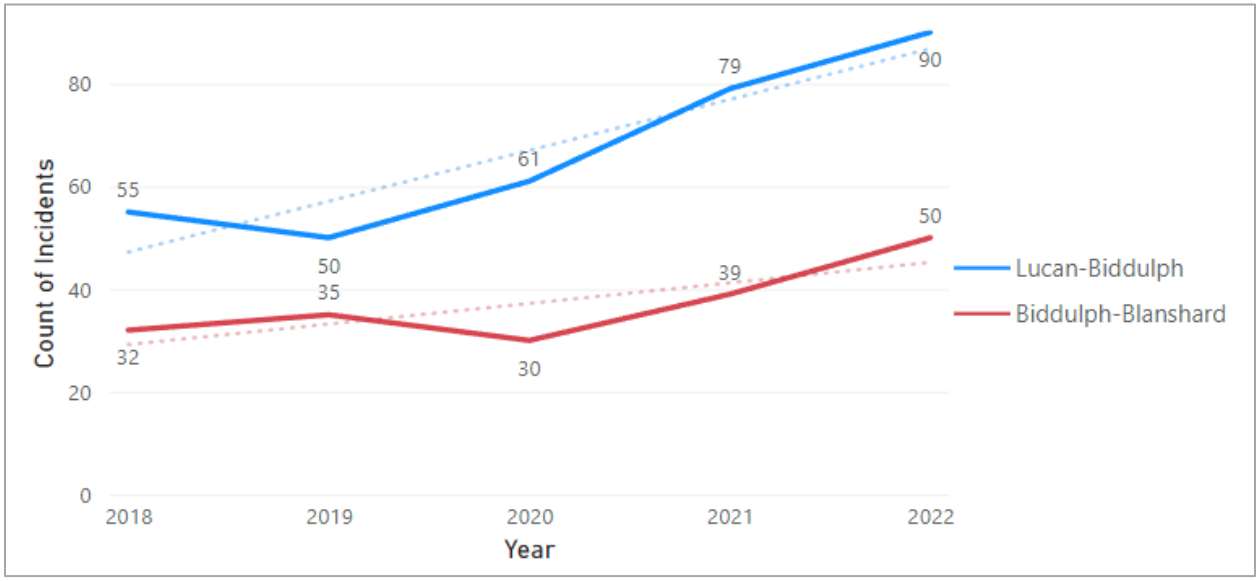
Incident Subcategory	2018	2019	2020	2021	2022	**Total**	Total **%**
Carbon Monoxide	3	0	0	1	1	**5**	1
False Alarms	16	12	20	26	28	**102**	23
False Incidents	7	5	6	8	7	**33**	7
Fire - Other	1	1	2	5	1	**10**	2
Fire - Outdoor	3	2	8	2	5	**20**	4
Fire - Structure	1	2	1	1	2	**7**	2
Fire - Vehicle	0	0	2	5	4	**11**	2
Medical	1	5	6	3	12	**27**	6
Motor Vehicle Collision	29	20	16	18	33	**116**	26
Other	8	8	4	11	10	**41**	9
Pre-Fire Conditions	2	3	6	4	4	**19**	4
Public Hazard	3	3	3	6	9	**24**	5
Rescue (other than Vehicle)	0	1	1	0	4	**6**	1
Mutual / Automatic Aid	2	5	1	10	7	**25**	6
Total	76	67	76	100	127	**446**	100%

The following observations regarding all incident types/all responses were noted:

- Motor Vehicle Collisions and False alarms comprise 49% of station responses in
- Medical incidents were constant during this period with a notable increase in 2022.
- Low angle and water/ice rescue occurred infrequently.
- Second station responses accounted for only 6% of all station responses.

Figure 13 includes counts of all LBFS incidents, including mutual aid and second station responses to neighbouring municipalities. This chart illustrates the general trends in activity levels and demand for service for each of the LBFS stations. Positive trends indicate an increase in incidents and negative trends indicate incidents decreased.

Figure 13: All incidents with the Township of Lucan Biddulph by Station (2018-2022)



The following trends regarding incident types and frequency for each station were noted:

- Lucan Biddulph station experienced a decrease in incidents in 2019 and has increased every year since and in 2022 was 160% of its 2018 response counts.
- Granton Station responses has remained stable with a similar peak in 2022 as the Lucan-Biddulph Station

Table 25 includes all LBFS incidents, including second station and mutual aid incidents outside of the municipality. This perspective provides insight into the types of incidents each station responds to and differences in the frequency of incident types in different locations. It shows the activity in the Township of Perth South which has a cost-sharing agreement for the Lucan Station. The information can be used to inform service-level decisions in the different demand zones. It also provides insight into the response frequency and activity levels for each station.

Table 25: All Incidents by Incident Type by Station (2018 to 2022)

	Lucan Station			Granton Station		
Municipality	Lucan Biddulph	Perth South	Other	Lucan Biddulph	Perth South	Other
False Incidents	129	1	1	10	4	2
Fire	43	0	5	13	14	1
Medical	14	0	0	13	3	0
Motor Vehicle Collision	57	0	7	59	11	0
Mutual Aid	15	1	12	34	4	5
Other Response	8	0	0	1	1	0
Public Hazard	41	0	1	8	3	0
Total	**307**	**2**	**26**	**138**	**40**	**8**

The following observations regarding incident types and frequency for each station were noted:

- Lucan Biddulph Station was dispatched to 335 incidents and was the busiest station during this period.
    - False Incidents are more than double the next closest incident group.
    - MVCs were the second most frequently occurring emergency incidents in this accounting for nearly 19% of the station's activity.
    - Medical incidents occurred at similar frequency in this in comparison to the Granton Station.
- Granton Station was dispatched to 186 incidents during this period.
    - MVCs were the most frequent incident (70), accounting for 38% of the station's activity.
    - Fire incidents were equal between Lucan Biddulph and Perth South
    - Mutual Aid incidents to outside Agencies and Lucan Biddulph station made up 23% of responses/
    - False Incidents were uncommon for this station.

Table 26 considers the frequency of specific types of fire-related station responses. It is a general indication of the types of fire risk occurring within each station's demand zones. Typically, structure fires would involve the highest risk to life and property. Except for wildland urban interface fires, structure fires typically involve the highest risk of firefighter injury and can tax fire department resources.

Table 26: Fire Incidents by Type by Station (2018-2022)

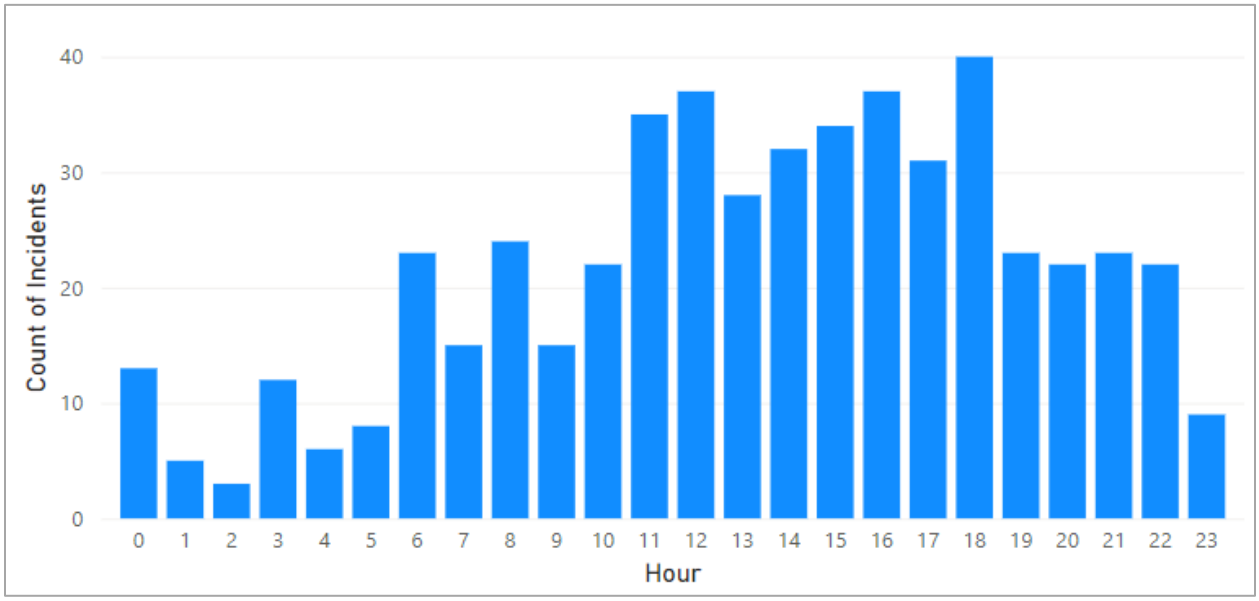
Incident Type	Lucan Station	Granton Station	Total
Fire-Vehicle	11	2	13
Fire-Structure	10	8	18
Fire-Outdoor	20	12	32
Total	41	22	63

The following observations regarding fire incident types and frequency for each station were noted:

- The frequency of structure fires is relatively low and accounted for approximately 29% of all fire-related incidents.
- The Lucan Station responded to significantly more vehicle fires than the Granton Station.

The time incidents occur is useful in identifying periods of peak and lower demand for services. Typically, demand for emergency services is lowest in the early hours of the morning. The horizontal axis in Figure 14 Incidents by Time of Day begins with 0 hours (12 p.m. – 1 a.m.) and ends at 23 hours (11 p.m. to 12 p.m.).

Figure 14: 2018-2022 Incidents by Time of Day

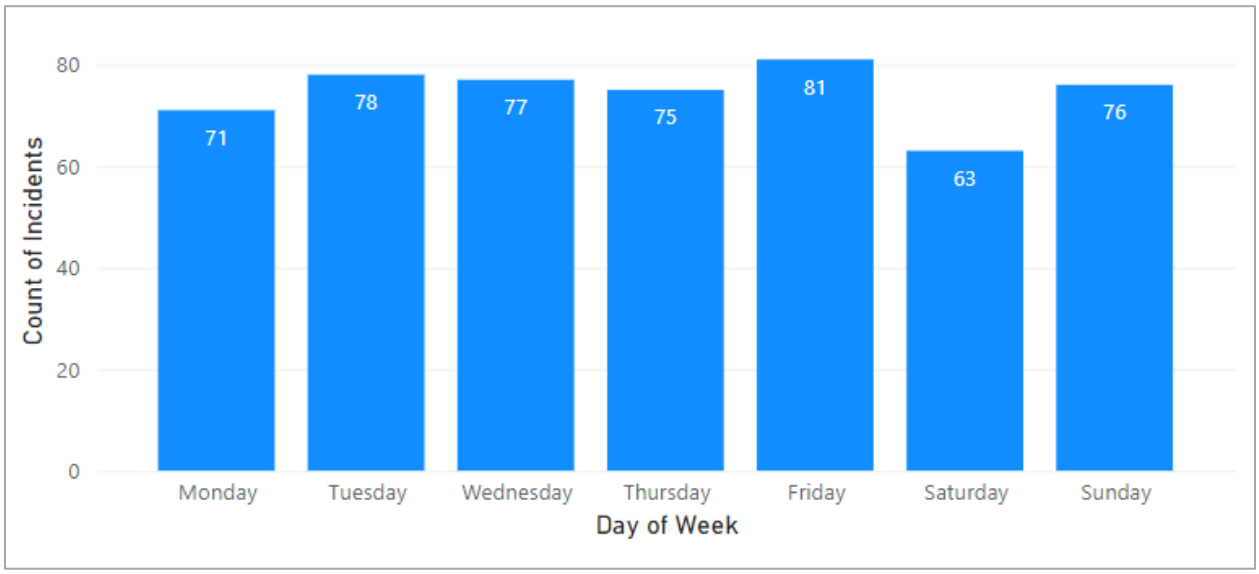


The following observations regarding the time incidents occurred were noted:

- Most incidents are occurring during the daytime hours when people are most active and or traffic flow is highest, and the majority of POC volunteer firefighters are likely to be at work.
- Incidents began to increase around 6 a.m. and peaked around 12 p.m. and then again around 6 p.m.
- This two-peaked pattern is common in fire and emergency service.
- After 6 p.m. the number of incidents declined steadily until 1 a.m.

Similarly, monitoring the days of the week in which Lucan Biddulph Fire Services respond most and least frequently provide additional insight into potential pressures in service delivery. Typically, emergency services respond most frequently on Friday and Saturday.

Figure 15: 2018-2021 Incidents by Day of Week



The following observations were noted in service demands for different days of the week:

- In general, incidents occurred with similar frequency throughout the week.
- The fewest incidents occurred on Saturdays and the most occurred on Fridays, but the variation was very minimal.

4.3 Response Performance

The following sections provide an analysis of the response performance of LBFS. The response performance is assessed based on two key elements – the length of time taken to respond and the adequacy of resources responding to safely manage an emergency incident. The response performance goals applied in the analysis are identified in the NFPA 1720 standard.

4.3.1 Intervention Time

Total intervention time is the elapsed time between the incident occurring and the time incident management begins. The discovery of the incident and initiation of the emergency response system, typically by calling 911. From a community perspective, this time segment can be partially managed by implementing cyclical life-safety system inspections and promoting residential fire alarms and sprinkler systems.

After the 911 call is made, the emergency response system is engaged to manage the incident and minimize its impact. Simplified, the system is composed of an emergency dispatching centre and the first responding agency. Although many of the requests for service may not require an urgent intervention, when it is, the main purpose of this system is to respond and manage the incident as quickly as is safely possible. As a result, the times taken to get all the relevant caller and incident information (Alarm Processing time), notify first responders and have them prepare to respond (Assembly time), and drive to the incident (Travel time) are all critical elements of an effective response. These time segments are the focus of this section and are the key indicators of total response time performance.

Total response time is the best indicator of how the entire system is functioning. It also reflects the experience of the person making the 911 call. System performance can be managed and improved by implementing best practices and supporting technologies. As a result, total response time performance should be monitored and reported to the authority having jurisdiction (AHJ) regularly. The causes of significant changes in response time performance should be identified and discussed with the AHJ.

Incident management time is variable and depends on the type of incident and the resources required to safely manage it. Fire department resource availability is determined by the concentration (how many and what types of resources there are in one station) and distribution (where are those resources located relative to the incident) of fire department equipment and firefighters. Resource requirements are based on community risks. An adequately resourced response system should provide an effective response force (ERF) to safely manage commonly known risks as effectively and efficiently as possible.

Figure 16 provides an overview of the incident intervention timeline. The definitions and descriptions of the actions taken in each time segment are provided below.

Figure 16: Incident Intervention Continuum

Notification	**Intervention Time**			
Incident Discovery and 911 Call	Alarm Processing	Assembly / Chute Time	Travel Time	Set-up
Time unknown (Time varies with every incident)	64 Seconds	80 Seconds Fire 60 seconds medical	240 Seconds	May vary by event
Time indirectly manageable	*Time directly manageable*			
Time Values				

Discovery: This is the time between the start of the emergency incident and when a person or an engineered system has detected the incident.

Emergency 911 Call: This is the time taken dial 911 and notify the 911 call centre for the need for emergency services.

Alarm Handling: This is the time segment begins when the 911 call is answered and ends with the notification of firefighters. It is the time taken to extract the necessary information from the 911 caller to allow the proper response to be initiated.

Assembly Time: This is the time segment begins when dispatch notifies the firefighters until the vehicle leaves the station for response. Time is required for POC volunteer firefighters to respond to the station, dress in proper personal protective equipment (PPE) and safely egress the station.

Travel Time: This time segment begins when an apparatus leaves the station or otherwise begins the response to the scene of the emergency and ends at the time when the assigned vehicle arrives on scene. This time segment is a function of distance and the speed traveled.

Total Response Time: This time segment begins when the 911 call is answered and ends when the first apparatus capable of commencing the incident management arrives.

Setup Time: This is the time it takes (on-site) to evaluate the necessary actions, position the required resources, and commence the intervention. In the case of a fire, completing size-up, assigning the necessary tasks, and deploying resources can provide delays on scene. A well-trained crew can minimize these delays while providing a safe, successful response.

4.3.2 NFPA 1720 Performance Standards

Recognizing that POC volunteer fire departments serve a variety of community types with varying population densities and geography, NFPA developed response time and staffing standards relative to regional and individual demand zone conditions. NFPA 1720 response standards are lowered as population density decreases and travel distances increase within a demand zone increase. For example, the response goal for urban areas is to respond within nine minutes 90% of the time with 15 firefighters whereas the rural response standard is within 14 minutes 80% of the time with six firefighters. It is important to note that depending on the geography of a fire department's total response area and demand zone(s), levels of service may vary across demand zones for a fire department. Additionally, the response standards identified in NFPA 1720 are considered a leading practice and not a legislated requirement.

Table 27: NFPA 1720 Staffing and Response Time Standards

Demand Zone	Demographics	Minimum Staff to Respond[b]	Response Time (minutes)[c]	Meets Objective (%)
Urban area	>1000 people/2.6 km^2	15	9	90
Suburban area	500-1000 people/2.6 km^2	10	10	80
Rural area	<500 people/2.6 km^2	6	14	80
Remote area	Travel distance ≥ 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

[a] *A jurisdiction can have more than one demand zone.*
[b] *Minimum staffing includes members responding from the AHJs department and automatic aid*
[c] *Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.*

LBFS has two fire stations with unique demand zones. The population densities and geography vary within areas across Lucan Biddulph. As a result, service levels goals may vary across and even within a station's demand zone. The difference in population density across the demand zones will change over time with development and changes in population.

The intent of the aggressive response goals in NFPA 1720 is to minimize total intervention time. Increased intervention time can have the following important impacts on a property owner/patient/victim:

- Decreased survivability
- Increased property loss in the event of fire
- Building design restrictions for response times beyond 10 minutes
- Potentially higher property insurance premiums based on extended response times and proximity to water supply.
- Longer-term economic impacts resulting from increased recovery time.

4.4 Emergency Response Performance Analysis

The time segments identified above are calculated by the dispatching service capturing individual response timestamps throughout an incident. The timestamps are recorded by the dispatching agency and used to compile a complete history for all responding emergency vehicles to every incident. Examples of typical incident timestamps include:

- Incident begins.
- Station or firefighter notification

- Apparatus responding
- Apparatus arrived.
- Loss stopped.
- Leaving scene
- Returned to station.

The response performance analysis for LBFS focuses on emergency responses from 2018 to 2022. The timestamps are used to calculate alarm-handling time, assembly time, travel time and total response time. Emergency response performance information can be used by the fire chief and senior administration for several purposes including but not limited to:

- Monitoring response efficiency and effectiveness
- Reporting response performance to community and elected officials
- Evaluating the effectiveness and compliance with national and provincial codes
- Evaluating the effectiveness and compliance with Council policies and local bylaws
- Identifying improvement strategies
- Developing or modifying service level standards
- Planning for future resource needs (operational and capital)

Historically, fire departments typically reported their average performance. Contemporary fire and emergency services report 80th or 90th percentile performance times to provide a more precise representation of response reliability depending upon whether they are POC volunteer or career fire departments.

Emergency response time analyses typically begins with the timestamp identifying the point at which the 911 call is answered by the primary service answering point (PSAP). However, the PSAP for the entire London region is the London Police Service. Once the 911 call is taken, it is transferred to the appropriate dispatching centre. All requests for service provided by LBFS are transferred and dispatched by the Strathroy-Caradoc Police Service dispatch centre. The incident begin time captured by the PSAP was not included in the available data. As a result, all the emergency response time segments in this analysis begin with the timestamp identifying when the alarm was answered in the Strathroy-Caradoc Police Service dispatch centre.

4.4.1 Alarm Handling

Alarm handling time is typically the cumulative time taken for alarm answering and alarm processing in the dispatching process. The initial time stamp available for the identifying the incident begin time in the PSAP was not available. Therefore, only alarm processing was analysed. Alarm processing time begins at the point of time the alarm is transferred and answered in the Strathroy-Caradoc Police Service Communications Bureau and ends when LBFS is dispatched.

NFPA 1720 suggests this should be achieved within 60 seconds, 90% of the time. Alarm handling performance is manageable by implementing best practice processes and supporting technologies. This benchmark should be monitored with the aim of ensuring this

process is as efficient as possible to achieve optimal total response time performance. However, non-emergency requests for service, identifying rural addressing and remote locations, or getting adequate levels of incident details may delay the interrogation time required to gather the appropriate information for first responders. No policy on specified emergency events was identified by the agency so only Fire and Motor Vehicle Collisions were used in this analysis where data was available.

Table 28: Alarm Processing Performance (in secs)

Alarm Processing	2018	2019	2020	2021	2022	5 Year
50th percentile	47	71	63	53	52	53
80th percentile	65	146	94	73	73	80
90th percentile	80	182	118	81	115	110
60 sec compliance	75%	28%	47%	55%	69%	60%
Total events	20	10	14	19	31	94

Note: Alarm Processing was calculated using high priority fire events coded as Fire or Motor Vehicle Collisions.

The following observations regarding alarm processing performance were noted:

- The 90th percentile alarm processing time had significant variation over the five-year period.
- Compliance with the 60 second NFPA standard was achieved approximately 60% of the time during this period.
- The number of events with available data for events was low and can be unreliable without access to broader alarm processing information from the dispatch centre. The high numbers in 2019 is a product of a small sample size rather than a significant drop in alarm processing performance.
- Granton Station does not record the alarm time in the Records Management System or provincial report data except for only a couple cases.

Observation #19: A significant portion of incidents are related to false incidents with a majority related to malfunctioning fire or CO alarm equipment.

Recommendation #19: Conduct an in-depth analysis to determine the current trends of 'alarms ringing' with the view to initiate preventative measures to reduce the occurrence and costs of false alarms.

(Suggested completion: 12-24 months)

Rationale: *High volume of False Incidents adds additional workload to volunteer departments and has the potential to create apathy and low turnout numbers. This results in lower resources in the instances where a real emergency exists. Effective public education, as well bylaws including proper enforcement penalties and fees for recurring and/or nuisance alarms will assist with minimizing unnecessary draw on resources.*

4.4.2 Assembly Time

Assembly time is calculated from the point of notification of an alarm to the point at which firefighters begin traveling to the incident. For LBFS firefighters, assembly time begins when paged and includes travel to the firehall as well as the time taken to dress in their personal protective equipment and safely seat themselves on the responding fire apparatus. NFPA 1720 does not include an assembly time standard.

Assembly time is influenced by several factors including time of incident, availability of firefighters, road conditions and distance to the fire station. As a result, it is difficult to assess whether assembly time performance can be improved given the range of factors influencing it. However, assembly time should be monitored to assess its impact on total response time and establishing achievable service levels.

4.4.2.1 Data Limitation

As previously stated, the data provided by LBFS are the timestamps used to calculate alarm-handling time, assembly time, travel time and total response time of the first arriving unit without the initial alarm assignment that includes the number of firefighters and their arrival time on scene. There are several limitations in this analysis that does not facilitate a full evaluation of the current response performance. LBFS stations utilize two basic response configurations:

- **Convergent ERF**: the initial alarm assignment some firefighters respond to directly to the scene with a least one firefighter responding the station to drive the responding fire apparatus to the scene.

When firefighters routinely use their personal vehicles and directly respond to the scene, there may be additional implications with their personal insurance or liability of the municipality. While this is not an ideal or recommended method it is a widely utilized practice with rural or remote demands zones and volunteer fire services.

This is deemed as a high-level analysis. It must be clearly understood that there was no data available to determine how many firefighters responded directly to the scene or the effectiveness timestamp of being dressed in their personal protective equipment and ready for critical task assignment. Further there was no data available to determine how many firefighters assembled at the station before responding directly to the scene.

During interviews, LBFS indicated a goal of 10 firefighters in 10 minutes that may respond to scene however no method of tracking success rates to this objective was identified.

Therefore, the following tables regarding assemble, travel time, and total response time is solely based upon the first responding fire apparatus only.

Table 29: Convergent ERF Assembly Performance by Station – First Departing Only (in secs)

Station 80th Percentile	2018	2019	2020	2021	2022	5 Year
Granton Station	447	385	361	310	345	371
Lucan Station	No Data	274	289	286	282	289
80th percentile	447	363	337	306	328	345

Note: *Manual review of reports was required for Lucan Biddulph station. Only Fires were examined for assembly times due to unavailability of digital records.*

The following observations regarding assembly time performance were noted:

- Granton Station firefighters were able to depart in a little over six minutes 80% of the time.
- Lucan Station firefighters were able to department in just under five minutes 80% of the time.

As previously indicated, assembly time was calculated using the fire department notification and first responding apparatus timestamps. It did not include the time taken for a second or third apparatus to respond. As a result, the assembly times reported only reflect the time taken for the first apparatus. Additionally, the number of firefighters responding on the initial apparatus was not available. The assembly time is useful generalizing the time taken to respond at least one apparatus following notification. However, it is not a measure of how long it took for an Effective Response Force (ERF) to assemble and respond. Going forward it is critical for LBFS to compile and monitor this data to fully evaluate response performance. The new RMS identified at Recommendation 21 can provide the IT system to accurately record this data.

4.4.3 Travel Time Performance

Travel time is the time taken to drive to the location of the incident. It is measured from the point at which the responding vehicle leaves the station until the point of arrival on scene. Travel time is a function of distance from the fire station to the incident and the speed travelled to the incident. It can be managed by distributing fire resources in optimal response locations within demand zones. Travel time should be monitored to assess the distribution

and concentration of resources and assess whether additional resources are required in different locations to maintain service levels.

NFPA 1720 acknowledges the considerable variations in size and population densities of the demand zones of many POC volunteer fire services. Depending upon the specific geography, the standard offers several different response time goals, but it does not identify a specific travel time standard.

Table 30: 80th Percentile Travel Performance by Station (in secs)

Station 80th Percentile	2018	2019	2020	2021	2022	5 Year
Granton Station	397	377	229	301	406	373
Lucan Station	No Data	152	283	413	452	391
80th percentile	397	353	267	379	411	376

Note: Manual review of reports was required for Lucan Biddulph station. Only Fires were examined for travel times due to unavailability of digital records.

The following observations regarding 80th percentile travel times were noted:

- Both stations had similar travel times over the 5-year period based on available data
- Travel times in Lucan Biddulph are trending upward.

Reviewing the distance traveled from stations to emergency incidents can provide insight into the appropriate distribution of resources. The following data was entered into fire reports as an estimated distance traveled to the incident. As with any manual data entry and estimated data, it can be more prone to errors. However, the calculation is based on the average distances for each incident type and the impact of data entry errors affecting this calculation is decreased.

Table 31: Average Kilometers Travelled by Incident Type by Station (2018-2022)

Incident Type	Granton	Lucan	Both Stations
False Incidents	2.5	2.3	**2.3**
Fire	4.8	3.6	**3.9**
Medical	4.9	2.1	**3.5**
Motor Vehicle Collision	7.1	5.1	**6.1**
Other Response	5.0	2.9	**3.1**
Public Hazard	2.6	2.7	**2.7**
False Incidents	2.5	2.3	**2.3**
Average kilometres	6.0	3.1	3.9

The following observations regarding average kilometers traveled for emergency responses were noted:

- As a generalization, emergency incidents are occurring on average of within 3.9 km from stations.
- On average, the most frequent high-risk events such as fires and MVCs incidents are occurring further than average from the stations which normally suggests further investigation might be required for better future locations. In this case, the difference in distances is minor given the geography.

4.4.4 Total Response Time

Total response time would typically be measured from the point at which the emergency call is answered in the 911-dispatching centre to the time the first fire or rescue apparatus arrives at the incident. This time best reflects the emergency system's overall response performance and the experience of the person requesting the service. For the purposes of measuring compliance with NFPA 1720 response standards, total response time is measured from the point of fire department notification to the point of the first arriving fire apparatus. The rationale for this approach is to acknowledge that most volunteer fire departments contract dispatch services and are not in control of the time taken for alarm handling.

As the population, geographic footprint of developed areas and community risk increase, a fire department will experience an increase in concurrent requests for service, longer travel distances and a higher frequency of complex incidents. As a result, emergency response times will gradually increase as demand for service increases.

Table 32 identifies the 80th percentile total emergency response time performance for both LBFS' stations. NFPA 1720 recognizes that the variation in suburban and rural response performance is greater than urban responses and therefore adopted an 80th percentile standard. The 80th percentile suburban response time standard is 600 seconds (10 minutes), and the rural response time standard is 840 seconds (14 minutes). The 50th percentile LBFS is offered as a comparison to the 80th percentile times. In addition, compliance with a 10-, 12- and 14-minute response time goals were provided to give some insight to achievable response time service levels.

Table 32: 80th Percentile Response Performance by Station (in secs)

Station 80th Percentile	2018	2019	2020	2021	2022	5 Year
Granton Station	688	631	472	580	703	639
Lucan Station	484	497	530	488	579	530
80th percentile	552	552	527	526	607	554
50th percentile	401	427	386	386	472	411
10 min (600s) compliance	90%	87%	90%	91%	79%	86%
12 min (720s) compliance	92%	94%	95%	99%	92%	94%
14 min (840s) compliance	94%	99%	97%	100%	97%	97%

Note: *Response Time was calculated using incidents located within the Township of Lucan Biddulph and not mutual or automatic Aid.*

The following observations regarding LBFS emergency response performance were noted:

- Over the five-year period, the 80th percentile response times the Lucan Biddulph station consistently met the 80th percentile target of 600 seconds.
- The Granton Station met the 600 second response goal in two out of the five years examined however this station travelled twice as far to incidents on average (6.0 vs. 3.1) so some additional extended response times is expected.
- Cumulatively, the five-year compliance with a 600 second response time goal was 86%
- Cumulatively, the compliance with a 720 and 850 second goals were above 90% every year.

In general, and considering the limitations of the data provided, the response time performance of all LBFS stations was excellent. It is typically difficult for POC volunteer firefighters to travel to the fire station and respond as quickly as LBFS firefighters do. Response time performance should be monitored and routinely reported to the firefighters and council. To fully assess compliance with NFPA 1720, additional information would need to be collected including the number of firefighters that assemble and the timestamp they arrived on scene.

Township of Lucan Biddulph Bylaw 67-2001 and Bylaw 10-2001 Biddulph Fire Board Agreement are the establishing and regulating bylaw for LBFS. It does not include specific emergency response time performance service levels and provides only descriptions for each of the stations that operate independently. Furthermore, response performance such as the number of firefighters responding either directly or converging on scene, or the time increment to achieve a safe ERF and complete the critical tasks is not being tracked or monitored. All these components would be included in a standard of cover or service level policy. Section 2 and 3 provide recommendations on the review of current governing bylaws and the establishment of service level policy.

4.5 Response Coverage Analysis

This section provides mapping of the response coverage from both LBFS fire stations. The public perception of response time begins when they call 911 and the methodology used Processing Time into the calculation to determine the area coverage using based on the following formula:

Response Time Goal – (Alarm Processing Time + Assembly Time) = Theoretical Travel Time

For LBFS stations:

600 secs (10 min), 720 secs (12 min) or 840 secs (14 min) - (80th percentile alarm processing time + 80th percentile assembly time in secs) = theoretical travel time (in secs)

The theoretical travel time and road network travel speed data were applied to generate the response area of each station in the geographic information system (GIS) mapping program. The calculated theoretical travel time using this approach is a conservative calculation. Use of the

80th percentile alarm handling and assembly times to calculate theoretical travel time and corresponding area coverage for 10, 12 and 14-minute response time goals is highly reliable. When the 50th percentiles times are used, the associated alarm processing and assembly times would only be achieved about 50% of the time. In other words, the theoretical travel time and area coverage would only be achieved about 50% of the time. Whereas by using the 80th percentile times, the mapped area coverage is smaller but should be achieved 80% of the time and is therefore a more reliable representation of response area coverage within a given time.

The 80th percentile alarm processing time was standardized at 80 seconds for all station travel time calculations based on the five-year alarm processing performance for the Lucan Biddulph station due to the unavailability of data for the Granton Station. The variation in the theoretical travel times resulted from the differences in assembly time for each station. Assembly time was calculated using the first responding apparatus timestamp. It did not include the time taken for a second or third apparatus to respond.

Table 33: Theoretical Travel Time Calculation (in secs)

Station	5-Year 80th Percentile Alarm Processing + Assembly Times	Theoretical 600 Second Response Travel Time	Theoretical 720 Second Response Travel Time	Theoretical 840 Second Response Travel Time
Lucan Station	369	231	351	471
Granton Station	451	149	269	389

The Lucan Biddulph Fire Station had a considerably shorter assembly time and therefore longer theoretical travel time, and the resulting mapped area coverage is correspondingly larger for that station. The following observations regarding theoretical travel times were concluded:

10- minute response coverage

- Station response coverage is limited as the potential travel time to achieve the 10-minute goal is 2:29 for the Granton Station and 3:59 for the Lucan Biddulph station.
- The 10-minute response area coverage only slightly extends into Perth South for the Granton Station.

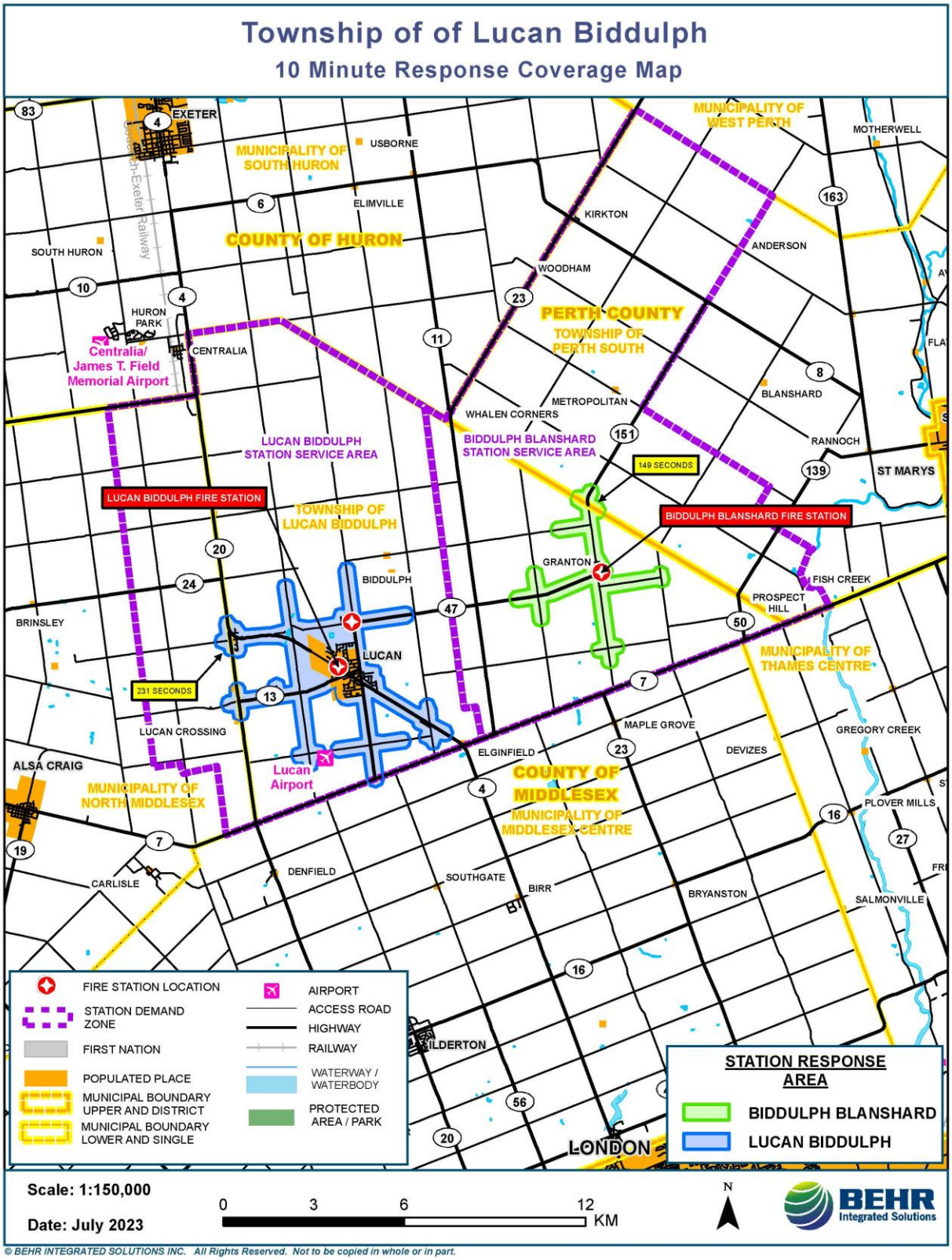
12-minute response coverage

- Considerable improvement in the geographic coverage and minimal overlap between the two station's response coverage.

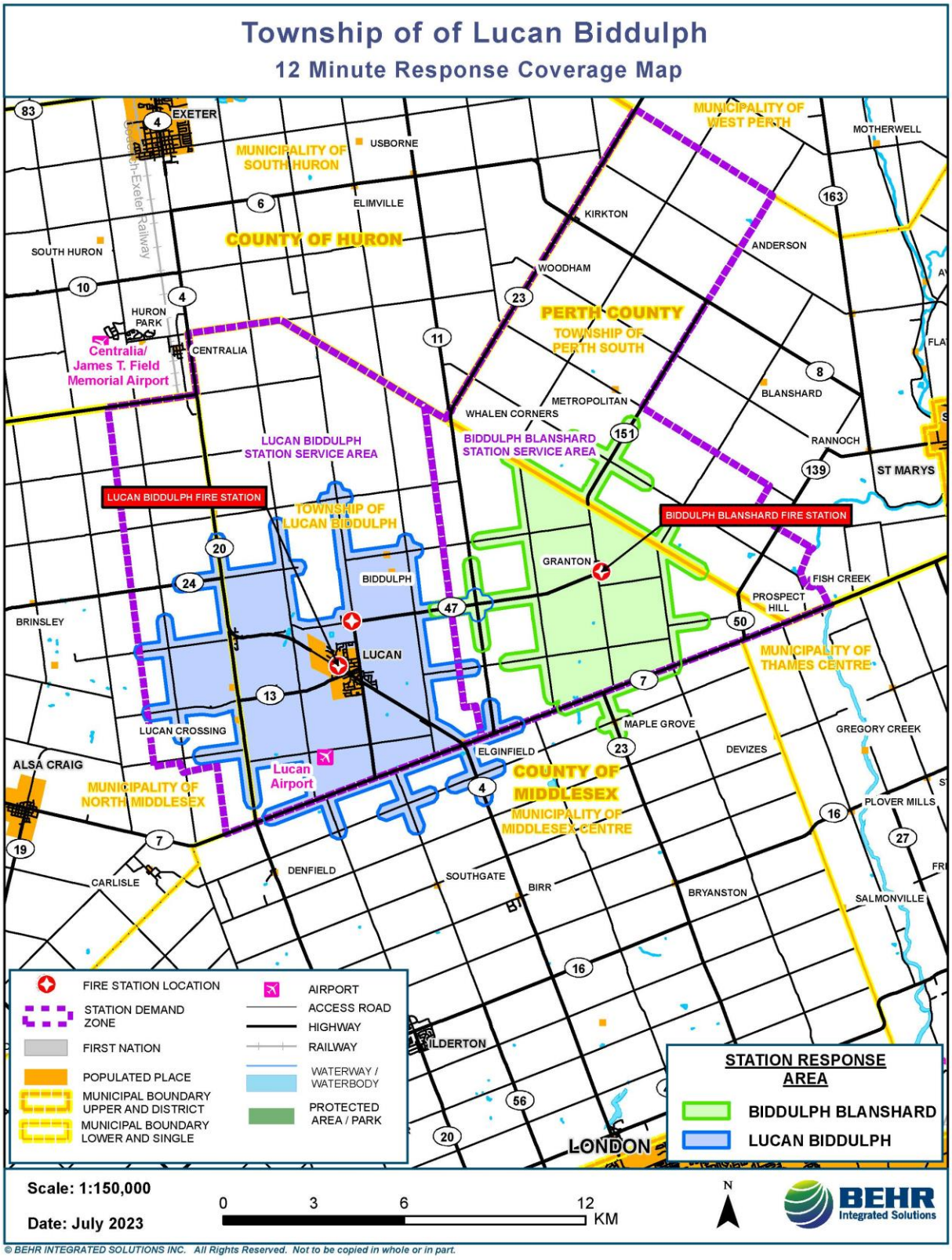
14-minute response coverage

- Some overlap exists in response areas between stations but not a significant portion of each stations demand zone.
- Most of the municipality would be covered by a response time goal of 14 mins.

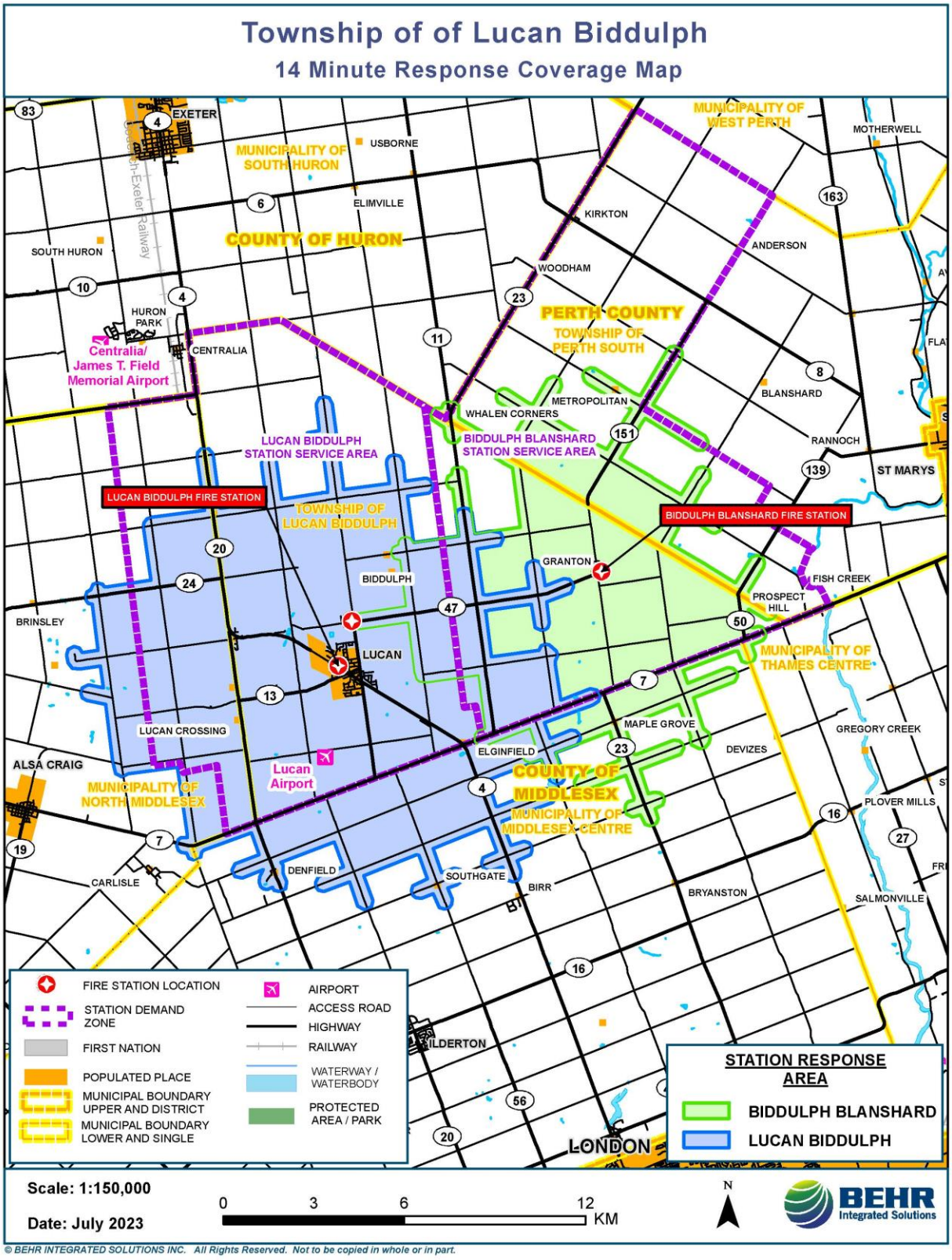
Map 2: 10-Minute Response Coverage Map



Map 3: 12-Minute Response Coverage Map



Map 4: 14-Minute Response Coverage Map



Observation #20: The 90th percentile alarm processing performance is trending upward and was approximately twice as much as the recommended 60 seconds in 2020 and 2022. There may be numerous reasons for the extended times for alarm processing including the increased time taken to determine incident locations in rural areas, dispatcher turnover, and potential technology or process challenges.

Recommendation #20: Work with Middlesex County to Investigate opportunities to reduce station notification processes and identify opportunities to reduce alarm processing time.

(Suggested completion: 12-24 months)

Rationale: *Alarm processing impacts fire department response and intervention times. Efforts to reduce this time segment has the immediate impact of reducing overall response time. Potential solutions to consider may include fire department pre-alerting, rural addressing improvements, alarm processing quality assurance and enhance computer-aided dispatch response recommendations.*

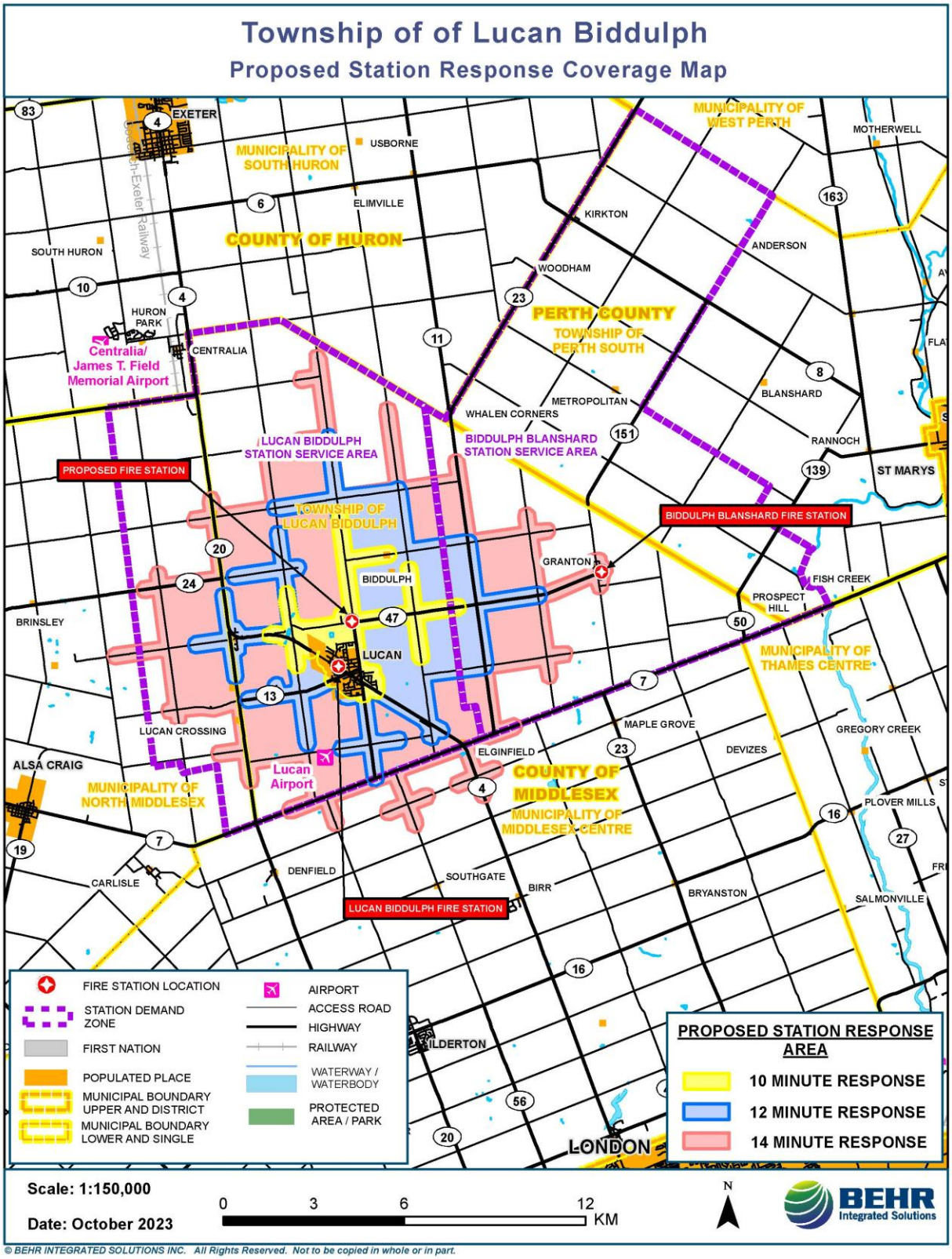
Furthermore, this data should be entered consistently into the departments Records Management System and reported through the Provincial Office of the Fire Marshal.

4.5.1 Alternate Response Location

During our review, we were asked to evaluate the consolidation fire service operations of both the Lucan Station and the Granton Station into one single station with the recommended location just north of the community of Lucan. Upon review, it was identified through the Official Plan that the growth for the community is anticipated in the Lucan area with limited growth in the Granton area. Furthermore, most emergency incident responses are in the vicinity of the Lucan Station.

Currently, the Granton Station provides additional coverage to the Township of Perth South through the Biddulph-Blanshard Fire service agreement. Annually, there is an average of 21 response calls from the Granton Station (excluding mutual aid to the Lucan Station) in the Township of Lucan Biddulph and an additional 8 calls are into Perth South. Response from the proposed location will be 14 minutes (currently 7:41) to Granton while response to Perth South will be more than 14 minutes.

Map 5: Proposed Response Location



Performance Time Impacts

Assembly Time - It is anticipated that assembly time to this proposed location will increase by about 60 seconds on average due to the added drive by volunteers in Lucan to this proposed location.

Travel Time – The current travel time at the 90th percentile for the Lucan Station is 391 seconds and Granton Station is at 373 seconds. Changes to the travel time in the Lucan response area will be minimal, however travel time to the Granton response area will be substantial. This will be better defined in total response time. Total response time better illustrates these differences.

Total Response Time – The current total response time at the 90th percentile in Lucan is 579 seconds and in Granton is 703 seconds. Operating as a single station operation from the proposed location will have minimal impacts on the total response time in the Lucan response area, however, will see an increase to the Granton area, including Perth South. The village proper in new modelling identified in Map 5 is the outer limit of an 840 seconds or 14-minute total response area. This is an increase of 137 seconds or more at the 90th percentile. The area to the north and east of Granton, including the entire coverage area within Perth South will experience total response time of greater than 840 seconds or 14 minutes.

There are certain benefits to building a new station, which include:

- Designed and purposed-built to current fire station building standards.
- Anticipating the current and future needs of a modernized fire service, including size of apparatus bays, health and safety requirements and training needs.
- Operating costs would be consolidated into one single station vs two stations resulting in lower costs for utilities, maintenance etc.
- Both the Lucan and Granton stations could be repurposed by the municipality or sold to cover cost of a new station.

It should be noted, there are potential impacts of increased insurance costs to the properties in the Granton response area due to the increased total response time. As insurance is a competitive industry and many factors are considered by individual underwriters, the final impact to insurance costs (if any) for homeowners in the Granton area is difficult to estimate.

4.6 Effective Response Force

This section provides further explanation on the importance of assembling an effective response force (ERF) comprising of adequate firefighters and equipment to manage emergency incidents safely and effectively.

ERF standards are based on fire response research completed by organizations such as NFPA and the National Institute of Standards and Technology (NIST). These standards are established to ensure adequate resources are available to complete critical tasks in a safe and timely manner. NIST research identified over 22 essential fire ground tasks at a typical single-family house fire. Ideally, NFPA suggests a minimum of 16 firefighters, or four companies of four firefighters, are

required for a full alarm assignment (17 if an aerial devise is used) for residential house fire. This goal is typically only achieved by urban metropolitan fire departments. However, the key point is that even a low-risk structure fire requires considerable resources to complete concurrent tasks and initiate interventions as quickly as possible.

NFPA 1720 identifies the minimum number of firefighters that should respond to a fire incident within a specific timeframe. For suburban responses, a minimum of 10 firefighters should arrive within 10 minutes, 80% of the time. Rural responses require a minimum of six firefighters to respond within 14 minutes, 80% of the time. LBFS stations were typically able to achieve a full alarm assignment however benchmark data that identifies numbers of firefighters on the responding units and firefighters that respond directly to the incident was not available. Compliance with NFPA 1720 staffing response performance standards is not possible without this information. Table 34 summarizes the median number of firefighters that responded to different incident types within the Township of Lucan Biddulph.

Table 34: Median Personnel on Scene by Incident Type in Township of Lucan Biddulph

Incident Type	2018	2019	2020	2021	2022	5 Year
Fire	8	12	13	10	13	**12**
Medical	17	12	13	12	12	**12**
Motor Vehicle Collision	13	13	14	12	13	**13**
Other Response	0	6	12	4	14	**12**
Public Hazard	14	10	13	9	10	**12**
Annual Median	**13**	**13**	**13**	**12**	**12**	**12**

Table 35 summarizes the median number of firefighters responding to emergency incidents from both LBFS stations over the five-year review period. All stations were able to respond with a median exceeding the suburban NFPA 1720 standard of 10 firefighters. Table 34 and 35 also do not include additional personnel from second station mutual or automatic aid response.

Table 35: Median Number of Personnel on Scene by Station

Incident Type	2018	2019	2020	2021	2022	5 Year
Lucan Station	14	12	13	11	12	12
Granton Station	13	13	14	12	12	13

4.7 Critical Task Analysis

A critical task analysis for common incident types illustrates the resources required to achieve tactical objectives based on resource availability. The rationale for completing a critical task analysis is to identify whether response policies and guidelines align with available resources. In other words, are enough firefighters typically responding to complete the critical tasks on emergency scenes in a safe and timely manner.

However, the optimal number of firefighters are not always available. Response policies and guidelines should identify critical task assignments and tactical objectives based on available

resources. The optimum numbers of firefighters to manage larger and more complex incidents may not be dispatched initially due to the availability of firefighters. As a result, tactical objectives should be scaled to reflect these limitations. For example, an interior fire attack or rescue may not be possible with a single engine company and a limited water supply. Response policies or guidelines should also identify a contingency plan to call-in of off-duty firefighters or initiate mutual aid resources/automatic aid for larger incidents complex incidents.

The following tables provide examples of critical task analyses that should be embedded in fire department standard operating guidelines or policies. The purpose of completing a critical task analysis is to establish the ERF response requirements and embed task assignments in standard operating guidelines. The examples provided are intended to illustrate leading practices with respect to the ERF required to safely manage commonly occurring emergency incidents. They are provided as a guide and not intended to specifically represent LBFS response capacity or apparatus.

Table 36: Low Risk: Small fire (no exposures): garbage, vehicle – private, grass, investigate (external), monitoring alarm (w/o confirmation)

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size up, Incident Action Plan (IAP) Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Total Personnel	4	

Table 37: Moderate Risk: Grass/wildland/brush fire (with exposures)

Initial Deployment	No. FF	Task Assignment
Utility Terrain Vehicle (Support vehicle requested as required)	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, Fire Control, Incident Stabilization
Tender	2	Water Supply
Engine	4	Firefighters for Operations
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management
Total Personnel	11	

Table 38: Moderate Risk: Attached garage, single family residential (detached/duplex)

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Ladder (if available)	4	Scene Safety, Water Supply, Aerial Operations, On-deck Assignment, Primary Search, Fire Control
Rescue	4	Scene Safety, On-Deck, Primary/Secondary Search, Fire Control
2nd Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management.
RDU & Pickup truck		Rehab, Command area, protection from elements
Total Personnel	17	

Table 39: Moderate Risk: Medical incident, cardiac arrest (VSA)

Initial Deployment	No. FF	Task Assignment
Engine or Rescue	4	Scene safety, Patient Assessment/CPR, Patient History, Apply Automatic External Defibrillator, Assist with Patient Packaging
Total Personnel	4	

Table 40: Moderate Risk: Medical incident, vehicle vs. pedestrian

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, scene safety, patient assessment / Care, patient packaging, Traffic Management
Rescue	4	Stabilization, Extrication, Traffic Management
Total Personnel	8	

Table 41: Moderate Risk: Motor vehicle crash (1-3 private vehicles)

Initial Deployment	No. FF	Task Assignment
Rescue	4	Incident command and size-up, safety, establish outer perimeter, pump operation, 2 FFs prepare hand line.
Engine	4	Establish inner perimeter, triage patients, patient care, extrication, patient packaging.
Total Personnel	8	

Table 42: Moderate Risk: Surface water, swift water or ice rescue, animal rescue

Initial Deployment	No. FF	Task Assignment
Water Rescue Unit	4	Officer of first arriving unit on scene assumes command, size up, scene safety and communications, patient contact, shore rescue if possible or water/ice rescue if required.
Rescue	4	Addition Resources for Shore operations, On Deck, Patient care
Squad	4	Addition Resources for Shore operations, On Deck, Patient care
District Chief	1	Overall Incident Command, safety, accountability, resource management.
Total Personnel	13	

Table 43: Moderate Risk: Small quantity (<20 L) of known product (gasoline, anti-freeze), open space natural gas smell or odor from unknown source

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Incident Stabilization
HAZMAT Unit	4	• Hazard and risk evaluation • Selection of personal protective equipment • Information management and resource coordination • Implement response objectives. • Decontamination and clean-up operations • Terminate the incident
Total Personnel	8	

Table 44: High Risk: Commercial, industrial, strip mall, warehouse, mid-rise residential

Initial Deployment	No. FF	Task Assignment
Ladder (if available)	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Aerial Operations, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
Rescue	4	Scene Safety, On-Deck, Primary/Secondary Search, Fire Control
3rd Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management
RDU & Pickup	2	Rehab, Command area, protection from elements
Total Personnel	19	

Observation #21: The two stations are appropriately located in the Township to provide excellent response time to the locations where most emergencies occur. The longer assembly times for the Granton Station are normal for a volunteer department where staff need to first respond to the station before donning their PPE and leaving in the fire apparatus. Given the lower population density differences, it is reasonable to assume firefighters are more likely to live further away from the station located in Granton when compared to Lucan.

Recommendation #21: Implement incident reporting procedures to record the time that apparatus leave the station, the number of firefighters on each apparatus, firefighters that respond directly to scene, and any firefighters remaining at the station.

(Suggested completion: 12-24 months)

Rationale: *It is recommended that the Lucan Biddulph Fire Service implement additional data reporting processes to evaluate compliance to the NFPA 1720 standard. Although response time is excellent overall, without confirming the number of personnel at the 10- or 14-minute mark, it is impossible to confirm what the NFPA compliance is.*

4.8 Measuring, Managing and Reporting Performance

Performance measurement and reporting is key to moving towards a databased culture of performance improvement and away from mere opinion. Performance measurement and reporting supports the following:

- Determining a baseline performance level according to the indicators
- Establishing achievable service goals based on current performance.

- Identifying the gap between desired goals and current performance levels
- Tracking progress toward achieving goals
- Benchmarking performance between departments
- Identifying problems and root causes
- Planning for the future

Performance data must be valid and reliable to generate useful and trusted performance reports. The Strathroy-Caradoc Police Service Communications Bureau is the contracted dispatch service provider. When interviewing 911 and non-emergency callers, the dispatcher identifies the incident type and captures a series of incident response time benchmarks. This information is then passed on to LBFS officer and used to complete their incident report. The report data is either entered the Granton Station record management system (RMS), Fire Pro or in the case of Lucan Biddulph station, entered directly into the provincial Office of the Fire Marshal system. Manual entry of response timestamp data is time consuming and prone to have more errors.

Operational performance data and service level expectations should be regularly reported to staff. Timely performance reporting reflecting operational performance metrics and service levels is key to implementing performance management and system improvements. One approach to providing timely information to fire staff is develop a performance dashboard. CAD and RMS technologies must be integrated to support this tool.

The first step in performance measurement is to develop the processes to collect reliable and valid data. As already discussed, fire and emergency services are typically data rich agencies. Manual entry of response data is a time consuming and error prone process. Use of integrated computer aided dispatch (CAD) and records management systems can improve the accuracy of the data captured and streamline the reporting process. These technologies simplify the conversion of data into useful information. Performance measurement and reporting is at the core of moving toward a databased culture and moves it away from mere opinion for fire services.

Observation #22: LBFS standard operating guidelines do not identify the number of firefighters and resources required to complete tactical or critical tasks. Critical task analyses will clarify incident resource requirements and identify the critical tasks to clarify firefighter tasks and manage an incident efficiently and safely. The assembly time discussed in the report needs to be established for the convergent ERFs used by LBFS. A common practice for POC services is to have one officer and three firefighters either onboard before exiting the station for the first alarm assignment, or fully established on scene before attempting the required critical tasks.

Recommendation #22: Complete critical task analyses for common incident types in response SOGs as a component of completing the service delivery policy.

(Suggested completion: 12-18 months)

***Rationale**: POC volunteer staffing models are limited by firefighter availability and ability to respond. Occasionally this limitation can result in inadequate staffing for more complex and larger incidents. As a result, tactics and critical tasks should be scaled to reflect available resources. For example, if the number of assembled firefighters or water supply are not sufficient to support an interior fire attack or rescue, fire tactics should be limited to exterior and defensive operations. Critical task analyses should be used to identify operational limitations in policy to clarify incident command objectives and maintain safe operations.*

Observation #23: LBFS does not routinely monitor and report response performance. The current process of collecting data and developing reports is largely reliant on manual processes. The ability to collect reliable data and identify changes in service demand and response performance is an important management function. Further, the ability to measure and report performance is critical in maintaining department accountability and transparency for response performance.

Recommendation #23: Expand the implementation of an RMS to the Lucan Biddulph stations and add the capability to support automated data transfer from dispatch and expanded reporting.

(Suggested completion 12-24 months)

***Rationale:** Fire departments have access to large amounts of data. However, the data only becomes useful if it can be developed into meaningful reports. Manual entry of data is both time consuming and prone to errors. Further, the correction of any errors compounds the inefficiency of this process. Contemporary CAD and fire department RMS systems can be integrated to streamline the data capture process. An RMS can typically be programmed to produce reports and queries to investigate specific topics or incidents.*

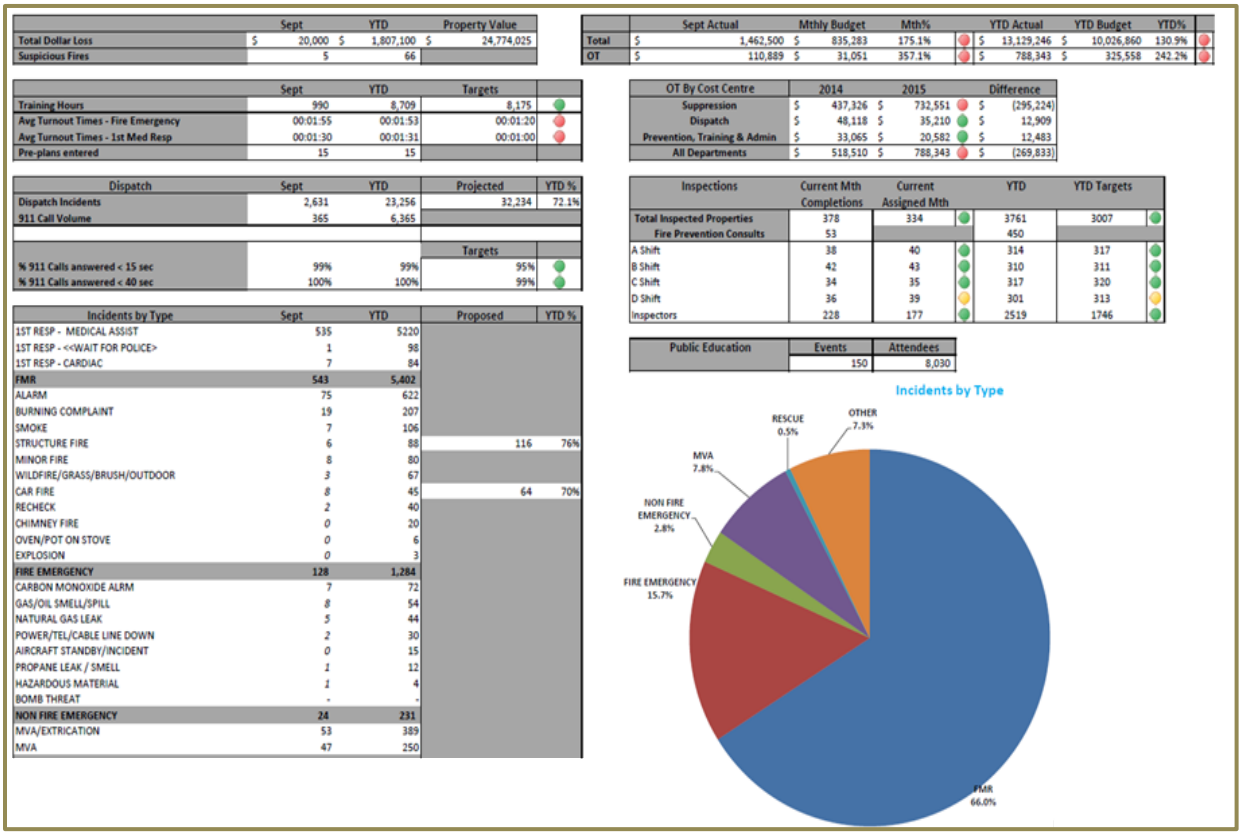
Observation #24: As previously identified LBFS does not routinely monitor and report response performance. The current process of collecting data and developing reports is largely reliant on manual processes. One approach to providing timely information to fire staff is to develop a performance dashboard. CAD and RMS technologies must be integrated to support this tool. Figure 17 provides an example of the information that could be reported on a performance dashboard.

Recommendation #24: Develop as part of the RMS implementation the capability to support data transfer and the regular reporting of emergency response performance.

(Suggested completion: 12-24 months)

Rationale: *Performance measurement and reporting are foundational elements in managing and improving performance in the fire service. Modern RMS systems should support the functionality to import response data and streamline report generation. These technologies simplify the conversion of data into useful information.*

Figure 17: Performance Dashboard Example



	Sept	YTD	Property Value
Total Dollar Loss	$ 20,000	$ 1,807,100	$ 24,774,025
Suspicious Fires	5	66	

	Sept Actual	Mthly Budget	Mth%	YTD Actual	YTD Budget	YTD%
Total	$ 1,462,500	$ 835,283	175.1%	$ 13,129,246	$ 10,026,860	130.9%
OT	$ 110,889	$ 31,051	357.1%	$ 788,343	$ 325,558	242.2%

	Sept	YTD	Targets
Training Hours	990	8,709	8,175
Avg Turnout Times - Fire Emergency	00:01:55	00:01:53	00:01:20
Avg Turnout Times - 1st Med Resp	00:01:30	00:01:31	00:01:00
Pre-plans entered	15	15	

OT By Cost Centre	2014	2015	Difference
Suppression	$ 437,326	$ 732,551	$ (295,224)
Dispatch	$ 48,118	$ 35,210	$ 12,909
Prevention, Training & Admin	$ 33,065	$ 20,582	$ 12,483
All Departments	$ 518,510	$ 788,343	$ (269,833)

Dispatch	Sept	YTD	Projected	YTD %
Dispatch Incidents	2,631	23,256	32,234	72.1%
911 Call Volume	365	6,365		
			Targets	
% 911 Calls answered < 15 sec	99%	99%	95%	
% 911 Calls answered < 40 sec	100%	100%	99%	

Inspections	Current Mth Completions	Current Assigned Mth	YTD	YTD Targets
Total Inspected Properties	378	334	3761	3007
Fire Prevention Consults	53		450	
A Shift	38	40	314	317
B Shift	42	43	310	311
C Shift	34	35	317	320
D Shift	36	39	301	313
Inspectors	228	177	2519	1746

Public Education	Events	Attendees
	150	8,030

Incidents by Type	Sept	YTD	Proposed	YTD %
1ST RESP - MEDICAL ASSIST	535	5220		
1ST RESP - <<WAIT FOR POLICE>	1	98		
1ST RESP - CARDIAC	7	84		
FMR	543	5,402		
ALARM	75	622		
BURNING COMPLAINT	19	207		
SMOKE	7	106		
STRUCTURE FIRE	6	88	116	76%
MINOR FIRE	8	80		
WILDFIRE/GRASS/BRUSH/OUTDOOR	3	67		
CAR FIRE	8	45	64	70%
RECHECK	2	40		
CHIMNEY FIRE	0	20		
OVEN/POT ON STOVE	0	6		
EXPLOSION	0	3		
FIRE EMERGENCY	128	1,284		
CARBON MONOXIDE ALRM	7	72		
GAS/OIL SMELL/SPILL	8	54		
NATURAL GAS LEAK	5	44		
POWER/TEL/CABLE LINE DOWN	2	30		
AIRCRAFT STANDBY/INCIDENT	0	15		
PROPANE LEAK / SMELL	1	12		
HAZARDOUS MATERIAL	1	4		
BOMB THREAT	-	-		
NON FIRE EMERGENCY	24	231		
MVA/EXTRICATION	53	389		
MVA	47	250		

SECTION 5
CONCLUSION

The goal of developing this Fire Services Master Plan is to conduct a comprehensive review of the Township of Lucan Biddulph fire service and produce a strategic plan for the next 5 years. This will provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

The LBFS is functioning remarkably well with no evidence of the typical challenges with volunteer services such as turnover, retention and recruitment. The emergency response capabilities analysis indicates that the total response time 80th percentiles are within leading practices. Both the Lucan and Granton services maintain a positive and professional interaction between them which is an indication of both fire chiefs' leadership

There are several observations and recommendations provided in this master plan to improve operational effectiveness and efficiencies to enhance administrative and governance processes. Key among the 24 recommendations is:

- Develop a service delivery policy for all demand zones within the township and contracted areas that includes the analysis and risk factors identified in the community risk assessment.
- Conduct a complete revision and update of the Establishing and Regulate a Fire Department by-law #67-2001.
- Initiate the integration of the Lucan Biddulph Fire Service into a single unified service.
- Conduct a needs assessment for an aerial apparatus to be added to LBFS fleet.
- Confirm medical co-response as a core service, and that the response performance capabilities be formally established and approved by Council.
- Develop a formal pre-incident planning program that will capture risks, fire protection systems, access and egress avenues and other factors relevant to an emergency response to any given property.
- Undertake a complete condition and functional assessment of both fire stations to support LBFS' core services and determine the long-term life cycle of these capital assets.
- Conduct an in-depth analysis to determine the current trends of alarms ringing with the view to initiate preventative measures to reduce the occurrence and costs of false alarms.
- Work with Middlesex County to Investigate opportunities to reduce station notification processes and identify opportunities to reduce alarm processing time.
- Complete critical task analyses for common incident types in response SOGs as a component of completing the service delivery policy.

- Implement incident reporting procedures to record the time that apparatus leave the station, the number of firefighters on each apparatus, firefighters that respond directly to scene, and any firefighters remaining at the station.

Although each recommendation has a corresponding timeframe, it is important to note this FSMP needs to be revisited on a regular basis to confirm that the observations and recommendations remain relevant. The recommendations outlined in this FSMP will better position LBFS to mitigate and manage community risks, monitor response capabilities and performance, and maintain excellent community relationships and value for money.

Notwithstanding operational observations around alarm handling and processes, response records management, achievement of an effective response force and the need for core service delivery performance targets, the LBFS is an exemplary fire service that is serving the community very well.

Finally, our interactions with the Township of Lucan Biddulph elected officials and staff revealed a highly professional and dedicated organization that is committed to providing the best possible service to the citizens of the township.

APPENDICES

Appendix A: Glossary of Terms

Appendix B: List of Figures, Maps, and Tables

Appendix C: Theoretical Response Mapping Methodology

Appendix D: LBFS Online Firefighter Questionnaire Results

Appendix A: Glossary of Terms

Apparatus	Any vehicle provided with machinery, devices, equipment, or materials of the Fire department for firefighting as well as equipment used to transport firefighters or supplies.
Assembly Time	From the time the notification sounds in the fire station until the first vehicle leaves the station. In a full-time department this is expected to be within 80 seconds but for volunteer departments the time to collect a response crew can vary widely depending on location and time of emergency as well as all the factors that impact travel time.
Chute Time	See Assembly Time
Dangerous Goods	This term is synonymous with the terms hazardous materials and restricted articles. The term is used internationally in the transportation industry and includes explosives and any other article defined as a combustible liquid, corrosive material, infectious substances, flammable compressed gases, oxidizing materials, poisonous articles, radioactive materials, and other restrictive articles.
Discovery	This is the time between the start of the emergency and when someone or an engineered system has detected the incident.
Dispatch Time	This is the time required to extract the necessary information from the caller to allow the proper response to be initiated. The dispatcher identifies the correct fire location and initiates the dispatch by paging the appropriate fire station.
Emergency Call	This is the period between discovery and the actual notification of emergency services.
Emergency Communications Centre	A facility dedicated to service receives calls, processes them, and then dispatches emergency units to the correct location in the appropriate time period.
Emergency Operations Centre (EOC)	The protected sites from which civil officials coordinate, monitor, and direct emergency response activities during an emergency or disaster.
Emergency	Any occasion or instance that warrants action to save lives and to protect property, public health, and safety. A situation is larger in scope and more severe in terms of actual or potential effects.
Fire Suppression	The application of an extinguishing agent to a fire at a level such that an open flame is arrested; however, a deep-seated fire will require additional steps to assure total extinguishment.
Hazard Analysis	A document, which identifies the local hazards that have caused, or possess the potential to adversely affect public health and safety, public and private property, or the environment.
Impact	The effect that each hazard will have on people such as injury and loss, adverse effects on health, property, the environment, and the economy.

Incident	A situation that is limited in scope and potential effects.
Intervention Time	The time from fire reporting to the point where the first arriving pumper, or other apparatus providing comparable functions, arrives at the fire scene and directs an extinguishing agent on the fire.
Mutual Aid Agreement	An agreement between jurisdictions to assist each other during emergencies by responding with available manpower and apparatus.
National Fire Protection Association	The National Fire Protection Association (NFPA) is an internationally recognized trade association established in 1896 that creates and maintains standards and codes for usage and adoption by local governments to reduce the worldwide burden of fire and other hazards. This includes standards and guidelines to which many fire departments utilize to carry on day-today operations.
Response	Those measures undertaken immediately after an emergency has occurred, primarily to save human life, treat the injured, and prevent further injury and losses. They include response plan activation, opening and staffing the EOC, mobilization of resources, issuance of warnings and direction, provision of aid, and may include the declaration of a State of Local Emergency.
Risk	The chance or likelihood of an occurrence based on the vulnerability and known circumstances of a community.
Setup Time	This is the time necessary on site to evaluate the necessary actions, position the required resources and commence the intervention. In the case of a fire, completing size-up, assigning the necessary tasks, and deploying resources can provide delays on scene. A well-trained crew can minimize these delays while providing a safe, successful response.
Standard Operating Guidelines (SOG)	A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely, which can be varied due to operational need in the performance of designated operations or actions.
Standard Operating Procedures	A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions.
Travel Time	Once a vehicle leaves the station, it must negotiate the best route between that point and the location of the emergency. Factors to consider for travel time are driver skill, weather, traffic, topography, road conditions and vehicle capabilities.

Appendix B: List of Figures, Maps, Images and Tables

Figures

Maps

Images

Tables

Appendix C: Theoretical Response Mapping Methodology

Response travel times are directly influenced by station location and can be varied based upon a cost/risk analysis and the development of performance targets.

Base Data Layers Requested

- Hydrology
- Single Line Road/Transportation Network
- Railways
- Municipal Boundaries
- Parks
- Projection File
- Orthophoto (GeoTIFF, Mr.SID), if available
- Emergency Services Locations

Data Formats

- Preference of ESRI Shapefiles

Purpose of Files

A. Hydrology
   i. Identify needs for response to water locations (if dependent on a water response unit)
   ii. Can be identified and analyzed with the rail network to locate spill contaminations, as well as containment for overland flow & flooding to water spills.
   iii. Locations of bridge crossings which can convert to varying incidents, as MVC/MVA, spill contaminants, etc.
   iv. Assists in the definition of the map for locational awareness by others.
   v. Completes the map.

B. Single Line Road/Transportation Network
   i. Used to determine response times from emergency locations to determine a network based on road speeds.
   ii. Roads are created into a network for response.

C. Railways
   i. Identified risk areas for impeding response time when crossing a roadway or proximity to municipal areas will also determine the response and apparatus used for a derailment response or other rail emergency or risks, such as chemical spill evacuations.

D. Municipal Boundaries
   i. Identifies the limits to response for mutual aid and responsibilities when overlaps occur within a response area. Also identifies sub areas for specific mapping and

identification of municipal and regional response zones. Provides information for gap analysis for future state locations or refinement of locations.

E. Parks
   i. Identifies the potential risk areas due to accessibility issues for tracts of land, as well as constraints and opportunities for new locational analysis for or against new stations within a municipality. Ability to determine development of new locations due to proximity. Parks are identified as local, regional, provincial, and national.

F. Projection File
   i. To ensure that we have the same data set up as being used by the Municipality or Client, measurements (both distance and time) and spatial location are correct when determining analysis.

G. Orthophoto (GeoTIFF, Mr.SID), if available
   i. We typically do not use the ortho on the output maps, but the analysis sometimes needs clarification of what is on the ground, and we use it to quickly ground truth locations and information needed prior to asking clients for clarification, or to substantiate clarification of an area.
   ii. Is a nice to have, yet hard to use, as it takes up a lot of memory/space and is difficult to ship/transfer.

H. Emergency Services Locations
   i. Identify the actual location rather than a theoretical location based on an address match to ensure that the data location is as correct as possible, and no mis-locations are identified on the initial running of the theoretical response times.
   ii. Locations may be moved from within a parcel to the front of the parcel whereby it touches the road network. Ensures the response from the station is captured. There are no corrections made to the movement of station to time, as it is typically within 50 metres.

Theoretical Response Zone

A. Assumptions
   i. Weather is average – no storms, rain, snow etc.
   ii. Roadway segments contain a node/junction at intersections.
      - If not available, road network needs to be cleaned and fixed.
   iii. Roadways need to sometimes extend beyond some municipalities.
   iv. Emergency responders are trained on response vehicles.
   v. Response vehicles are in good condition.
   vi. Roads are dry and in good condition.
   vii. Left turns are not reduced by a time %
   viii. Road speeds are provided by client, if not
      - Road class table used to populate speeds based on road classification.

- Road speeds are reduced from the posted sign, typically no more than 5%

ix. Traffic volume is average, there is no congestion or there is a free-flowing lane to be used.

x. Rail crossings are free to cross and do not impede response.

xi. Time of day is based on an average time from 9 am – 9 pm

xii. Opticoms (or similar product for traffic light manipulation) are present to allow for free moving response.

xiii. Intersections of roads are not reduced (the roads are reduced from other project limits and averaged over time for generality of best fit)

xiv. School zones are not adjusted unless identified, then changes to road net are made.

B. Response Time

i. Customized response based on Emergency Services Input

ii. Response time includes 80% of all calls for service.

iii. Total drive time along roads (determined above by road speeds)

iv. Variances are identified and are tweaked based on known data or other trends.

C. Response Polygons

i. Identify general area of response from the outer most limits driven.

ii. Also identify response zones for mutual aid

iii. Identify gaps in response.

iv. Aid in the development of Fire Zones for response

v. Assist in the identification of new stations.

vi. Also identifies needs to move stations to another location, as required.

Additional Analysis

A. Out of Scope Analysis (needs further discussion with client)

i. Transition from project to operationally based:

- Specific distance and travel
- Based on time of day
- Based on time of year
- Call volume
- Call types
- Modeling
- Scripting for batch work

B. Data Availability

i. When data available from clients is detailed enough, it is used.

ii. Not all data is detailed enough, and assumptions are made.

C. Analysis

i. Additional analysis can be performed (as reduction of road speeds to an intersection)

- For above example, identification of intersections can be complex, and data not always available:
  - Stop Sign
  - 3-Way Stop
  - Yield
  - Lights
  - Flashing Light

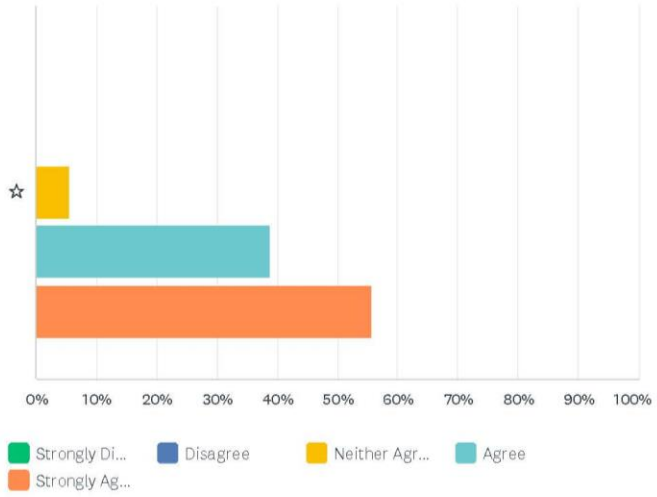
ii. Tends to be time consuming.

- Clients not willing to engage cost of this project.
- Levels of data may not be accessible.
- Missing detail
- Usually is a one-off project and new data being typically not leveraged.

Appendix D: Online Firefighter Questionnaire Results

Q1 The public feels they are getting good value for their tax dollars for fire and emergency services.

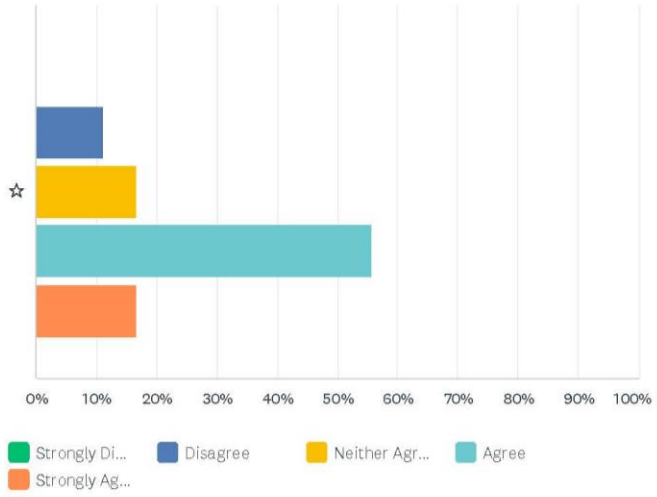
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	5.56% 1	38.89% 7	55.56% 10	18	0.00

Q2 The public has a good understanding of the fire service and its capabilities.

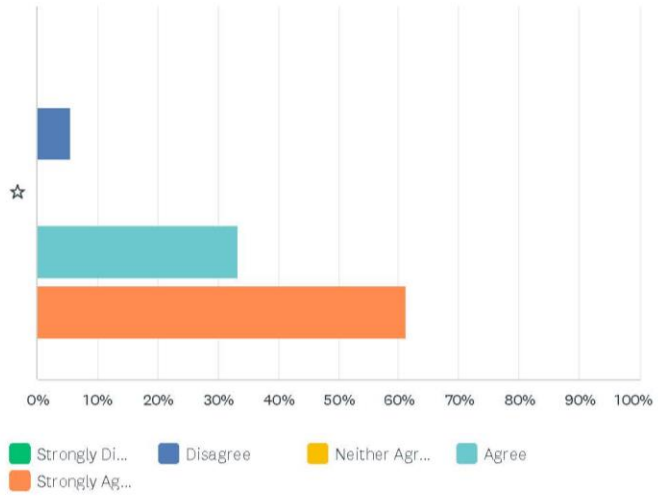
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	11.11% 2	16.67% 3	55.56% 10	16.67% 3	18	0.00

Q3 Your community receives adequate fire/rescue protection.

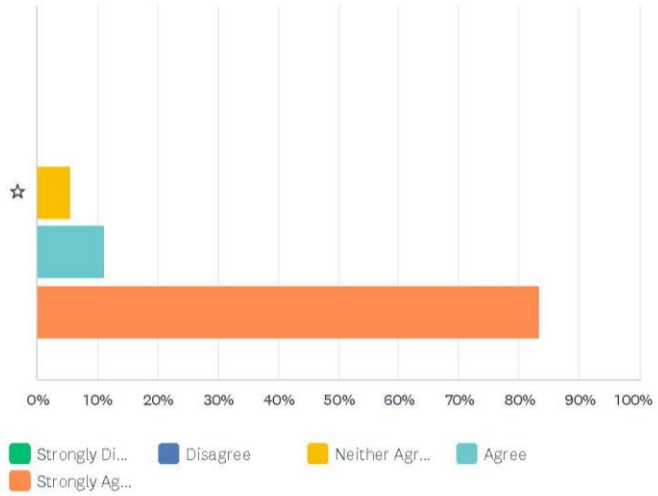
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	5.56% 1	0.00% 0	33.33% 6	61.11% 11	18	0.00

Q4 Based on the rate of community and economic growth, fire service demands will increase in the future.

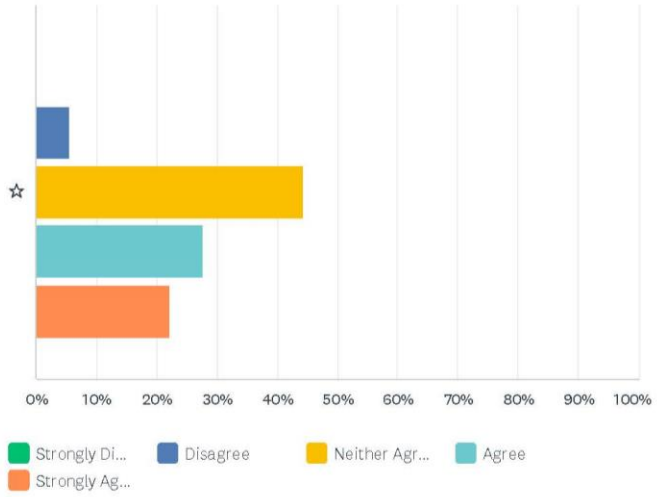
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	5.56% 1	11.11% 2	83.33% 15	18	0.00

Q5 The community has adequate alternate fire risk reduction strategies (e.g. residential sprinklers, FireSmart program, public education).

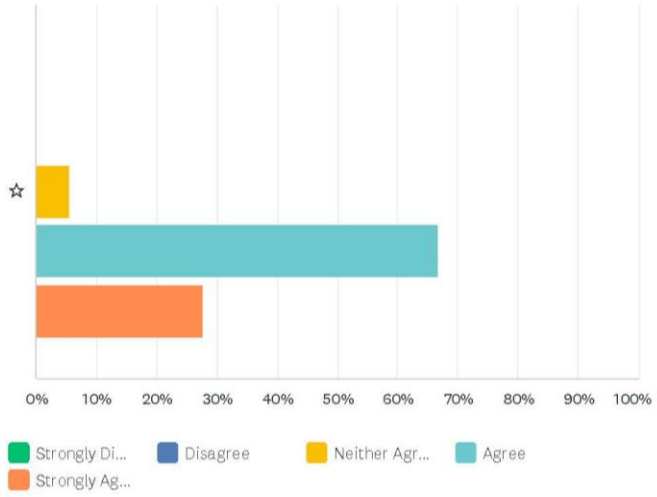
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	5.56% 1	44.44% 8	27.78% 5	22.22% 4	18	0.00

Q7 The fire service's current response model is adequately staffed for fire/rescue response.

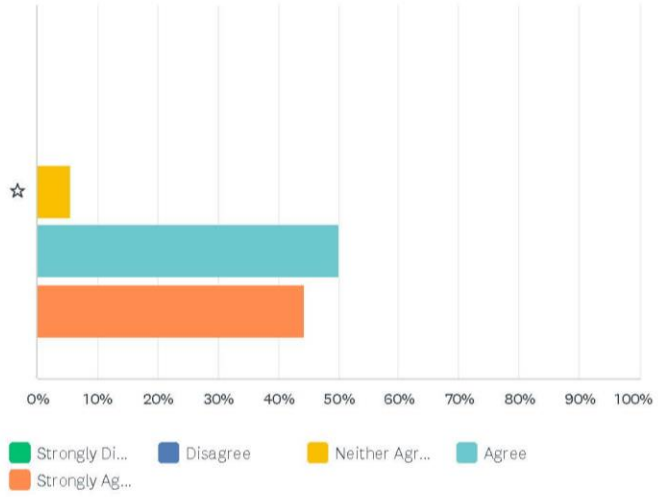
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	5.56% 1	66.67% 12	27.78% 5	18	0.00

Q8 The fire service's policies/procedures reflect fire/rescue industry best practices.

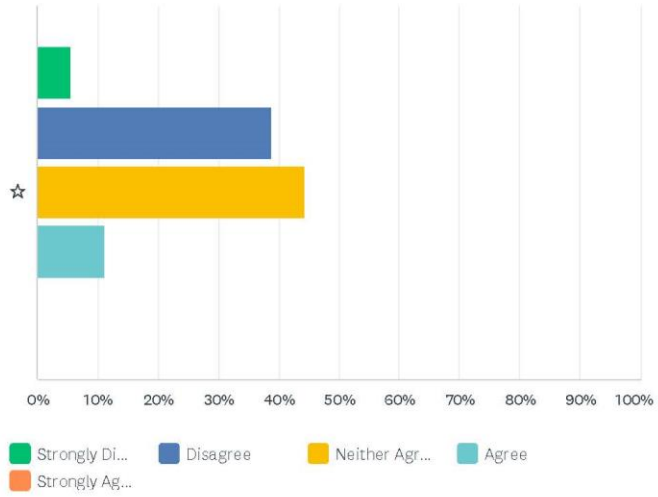
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	5.56% 1	50.00% 9	44.44% 8	18	0.00

Q9 Medical responses are over tasking the service's response capacity.

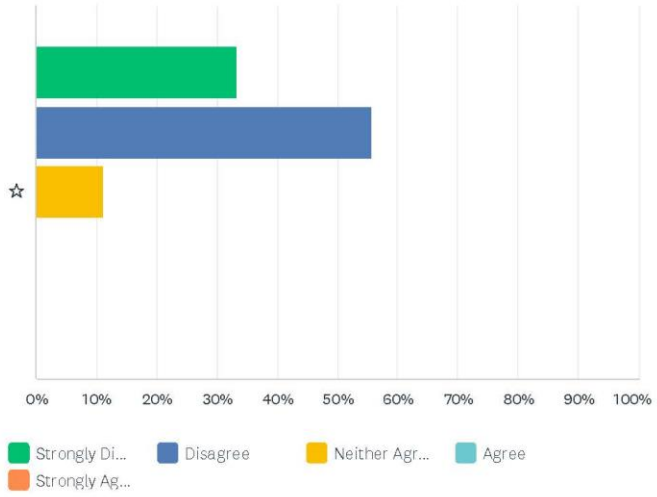
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.56% 1	38.89% 7	44.44% 8	11.11% 2	0.00% 0	18	0.00

Q10 Your fire service experiences a high rate of turnover.

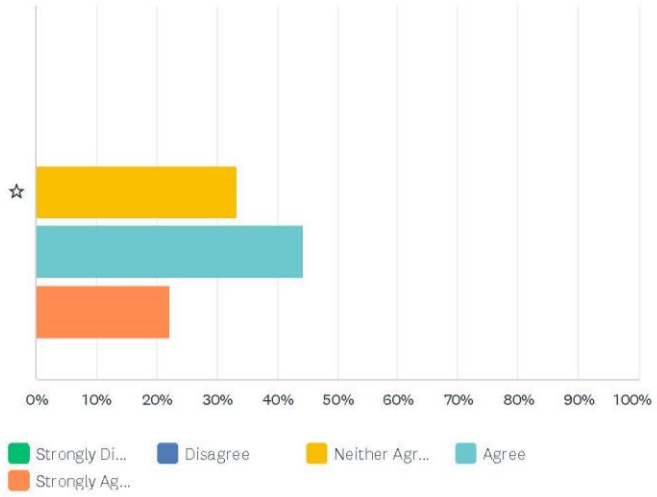
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	33.33% 6	55.56% 10	11.11% 2	0.00% 0	0.00% 0	18	0.00

Q11 Your current recruiting program is effective.

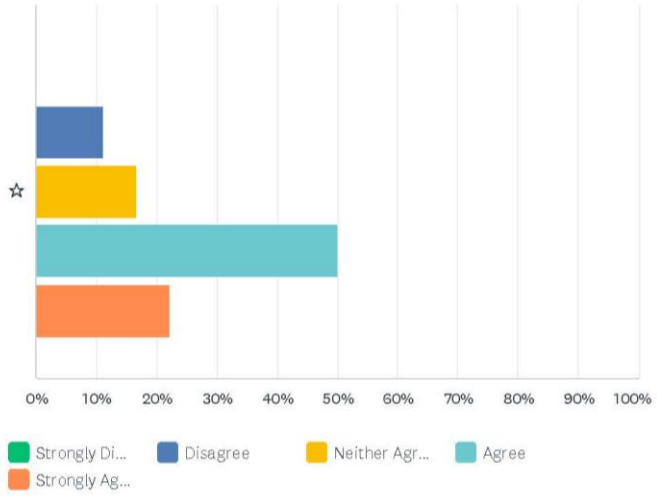
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	33.33% 6	44.44% 8	22.22% 4	18	0.00

Q12 The current level of live-fire and specialty team training is adequate for the services provided.

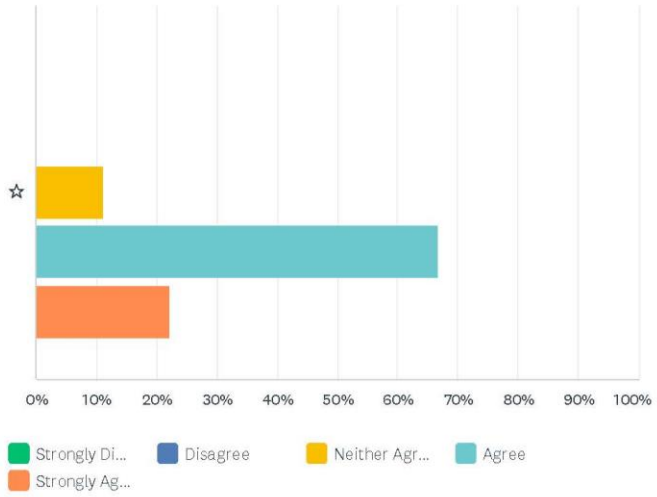
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	11.11% 2	16.67% 3	50.00% 9	22.22% 4	18	0.00

Q13 The current level of theoretical fire/rescue or leadership training you receive is adequate.

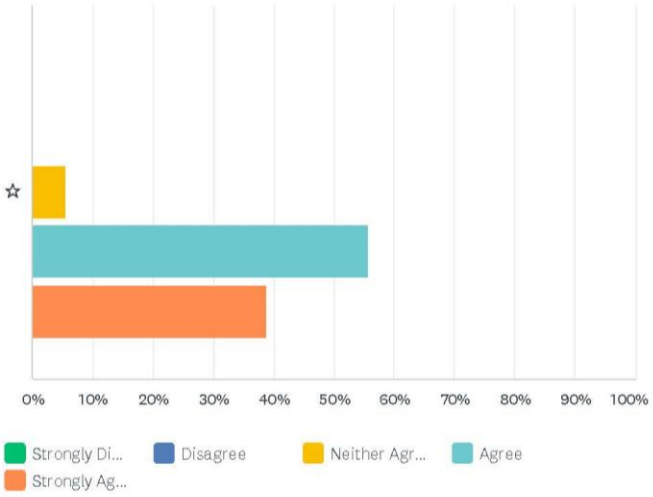
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	11.11% 2	66.67% 12	22.22% 4	18	0.00

Q14 You receive adequate training to maintain competencies and certifications.

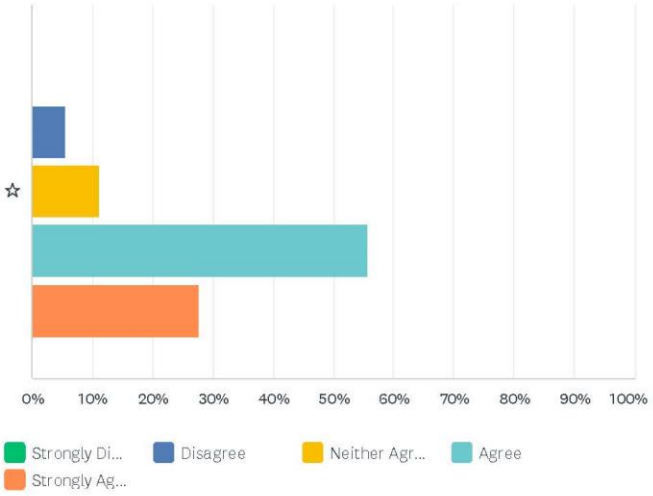
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	5.56% 1	55.56% 10	38.89% 7	18	0.00

Q15 Recruits are adequately trained before they are assigned to full duty.

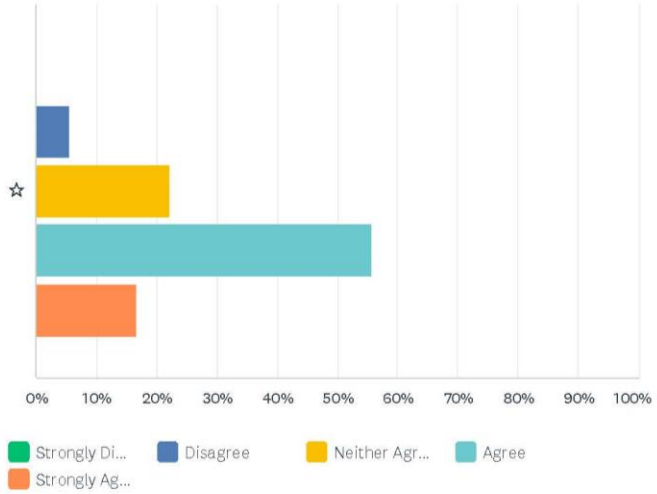
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	5.56% 1	11.11% 2	55.56% 10	27.78% 5	18	0.00

Q16 The service is adequately resourced with small equipment (i.e. SCBA, light duty vehicles, loose equipment and consumables).

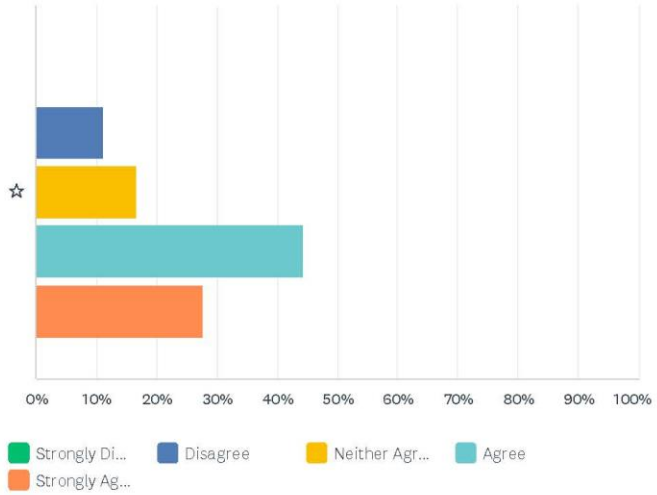
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	5.56% 1	22.22% 4	55.56% 10	16.67% 3	18	0.00

Q17 The current vehicle fleet of fire apparatus provides the capacity/capability necessary to meet the demands and types of responses.

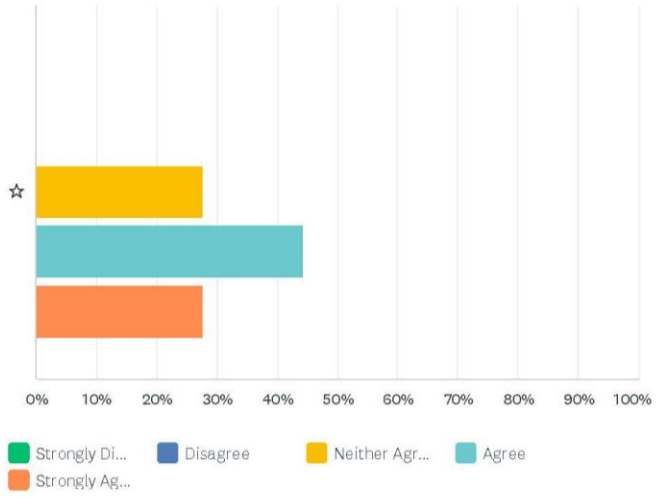
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	11.11% 2	16.67% 3	44.44% 8	27.78% 5	18	0.00

Q18 Fire apparatus are appropriately life-cycled.

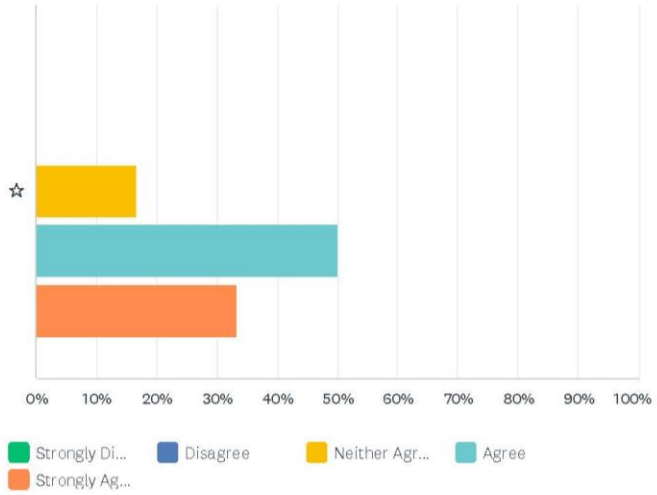
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	27.78% 5	44.44% 8	27.78% 5	18	0.00

Q19 The maintenance of fire apparatus is adequate.

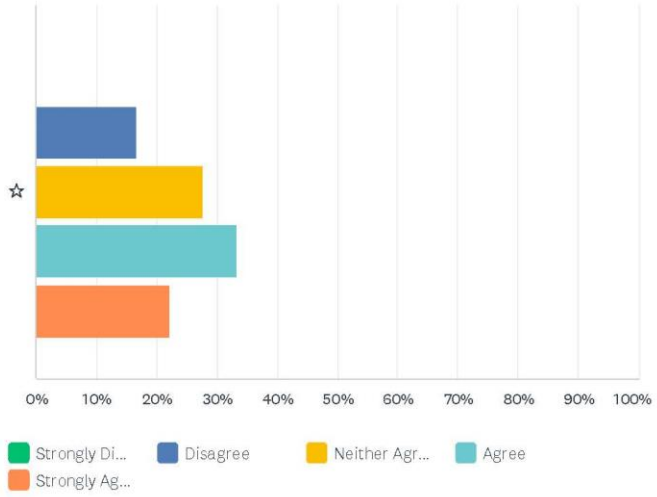
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	16.67% 3	50.00% 9	33.33% 6	18	0.00

Q20 The current fire stations are functional and meet the operational requirements of the department.

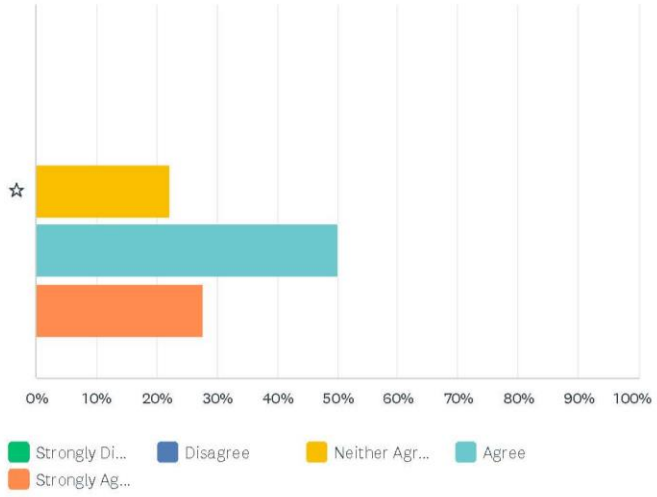
Answered: 18 Skipped: 0



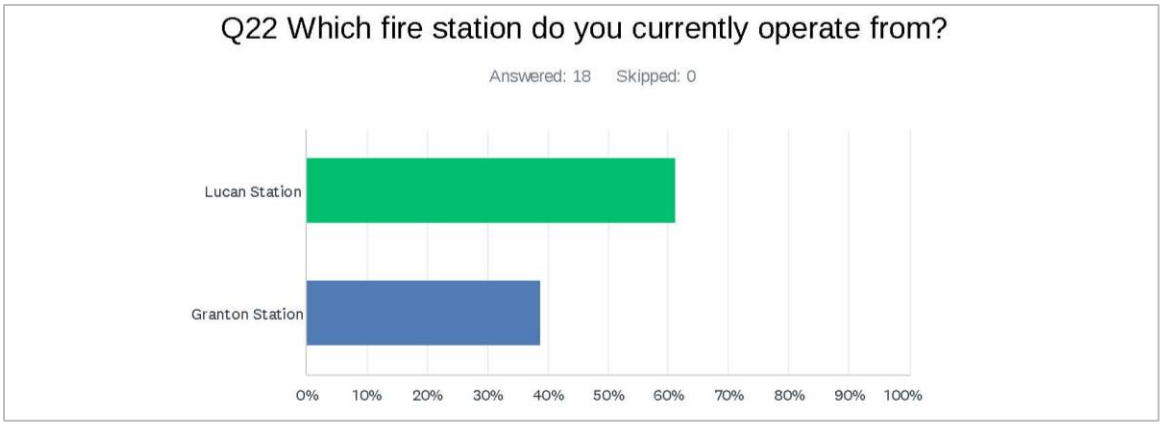
	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	16.67% 3	27.78% 5	33.33% 6	22.22% 4	18	0.00

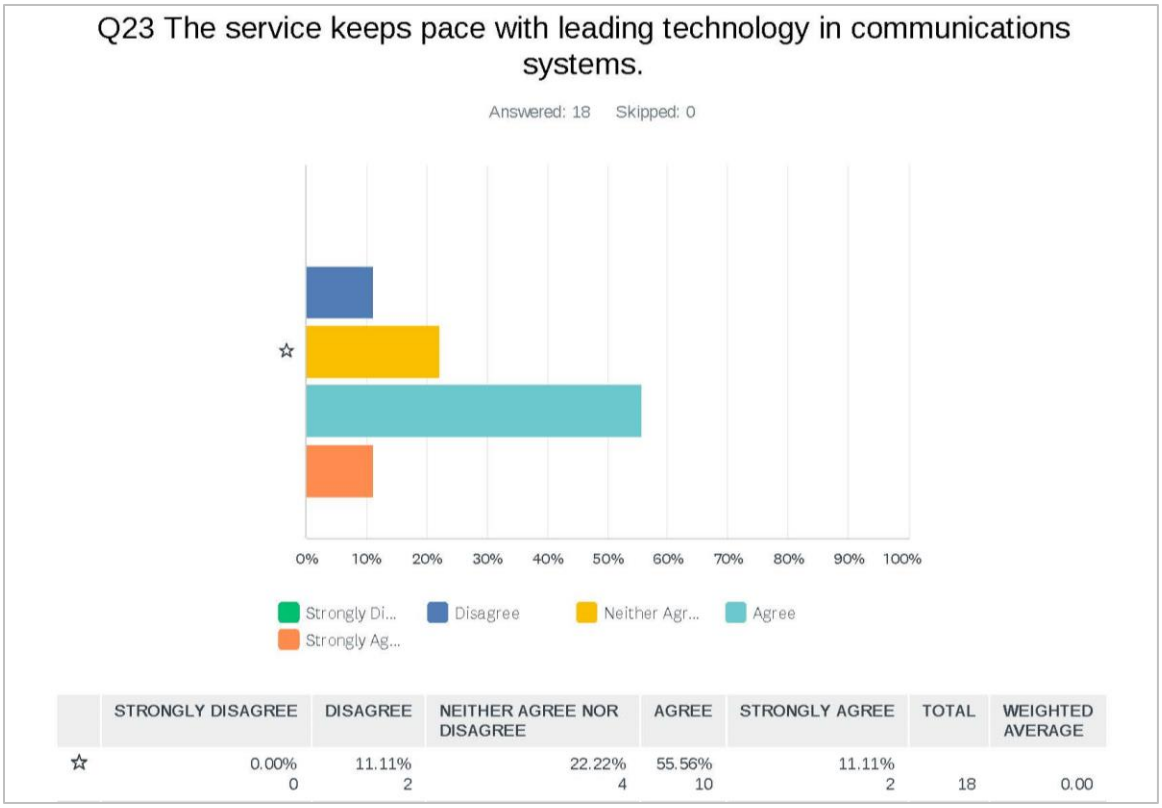
Q21 The current fire stations are strategically located for adequate geographic coverage.

Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	22.22% 4	50.00% 9	27.78% 5	18	0.00

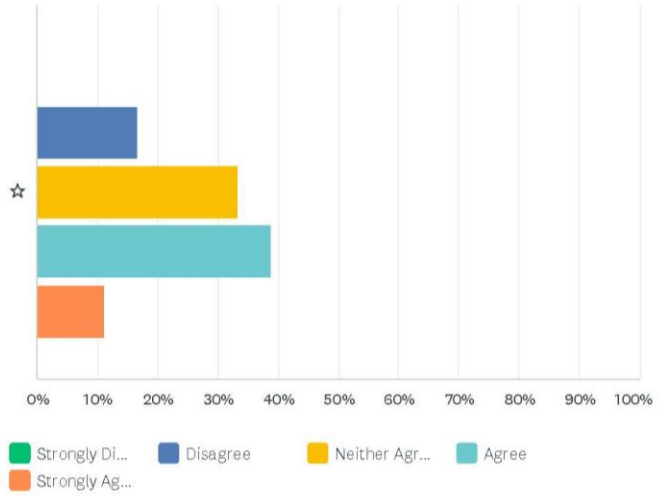




	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	11.11% 2	22.22% 4	55.56% 10	11.11% 2	18	0.00

Q24 The service keeps pace with leading technology in records management system and mobile CAD systems.

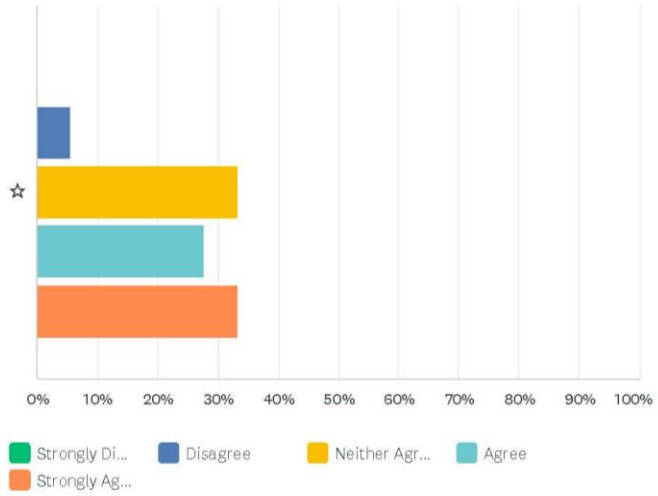
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	16.67% 3	33.33% 6	38.89% 7	11.11% 2	18	0.00

Q25 The service keeps pace with leading technology in station alerting and pre-alerting.

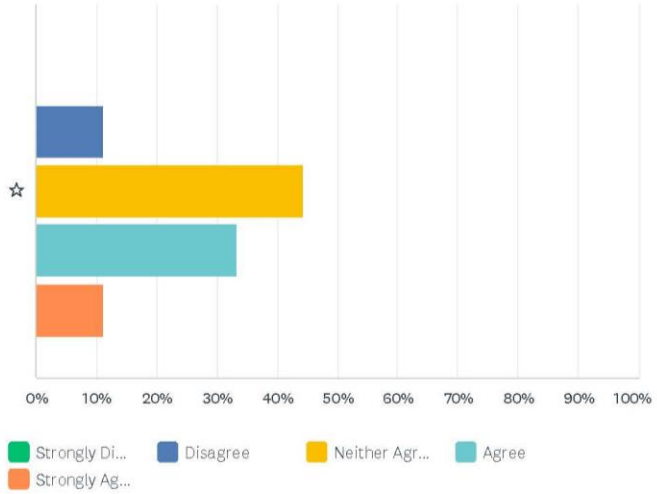
Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	5.56% 1	33.33% 6	27.78% 5	33.33% 6	18	0.00

Q26 The service keeps pace with leading technology in records management and fire reporting systems.

Answered: 18 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	11.11% 2	44.44% 8	33.33% 6	11.11% 2	18	0.00