



City of Burlington

Fire Master Plan

Final Draft Report

May 2022 – 19-9811

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Acronyms, Abbreviations, Definitions

APCO	Association of Public Safety Communications Officials
AS&E	Academic Standards and Evaluation
BCIN	Building Code Identification Number
BFD	Burlington Fire Department
BPFFA	Burlington Professional Fire Fighters Association
CACC	Central Ambulance Communications Centre
CEMC	Community Emergency Management Coordinator
CFAI	Commission on Fire Accreditation International
CFO	Chief Fire Official
CFPO	Chief Fire Prevention Officer
CFSEM	Comprehensive Fire Safety Effectiveness Model
CO	Carbon Monoxide
CPC	Commission on Professional Credentialing
CPSE	Centre for Public Safety Excellence
CRA	Community Risk Assessment
CRRP	Community Risk Reduction Plan
CRTC	Canadian Radio-television and Telecommunications Commission
CTM	Critical Task Matrix
EOC	Emergency Operations Centre
EMCPA	Emergency Management and Civil Protection Act
EMR	Emergency Medical Responder
ERFs	Emergency Response Facilities
ERUs	Emergency Response Units
EVT	Emergency Vehicle Technician
FMP	Fire Master Plan
FPI	Fire Prevention Inspector
FPO	Fire Prevention Officer
FPPA	Fire Protection and Prevention Act
FTE	Full Time Equivalent

FUS	Fire Underwriters Survey
GIS	Geographic Information Systems
HIRA	Hazard Identification and Risk Assessment
Igpm	Imperial gallons per minute
IMS	Incident Management Systems
LPM	Litres per Minute
MTO	Ontario Ministry of Transportation
MTSA	Major Transit Station Area
MW	Megawatt
NFPA	National Fire Protection Association
NG-911	Next Gen 911
NIST	National Institute of Standards and Technology
OBC	Ontario Building Code
OFC	Ontario Fire Code
OFSS	Ontario Fire Service Standards
OHS	Occupational Health and Safety Act
OFMEM	Office of the Fire Marshal and Emergency Management
OP	Official Plan
ROPA	Region Official Plan Amendment
O.Reg.	Ontario Regulation
PFSG	Public Fire Safety Guideline
PSAP	Public Safety Answering Points
PSHSA	Public Services Health & Safety Association
psi	Pounds per square inch
PTSD	Post-Traumatic Stress Disorder
RFP	Request for Proposal
ROPA	Region Official Plan Amendment
SCBA	Self-Contained Breathing Apparatus
SOG	Standard Operating Guideline
SOP	Standard Operating Policy
STI	Shift Training Instructor

TAPP-C	The Arson Prevention Program for Children
TG	Technical Guideline
TO	Training Officer
USAR	Urban Search and Rescue

Introduction

The primary objective of this Fire Master Fire Plan (FMP) is to provide the City of Burlington (City) Council, Senior Management and the Burlington Fire Department (BFD) with a strategic planning framework to inform the delivery of fire services within the City of Burlington over the next ten-year community planning horizon, as approved by council. To achieve this objective this fire master planning process has considered the City's legislative requirements as contained within the Fire Protection and Prevention Act, 1997 (FPPA) and the Occupational Health and Safety Act, RSO. 1990 (OHSA). The accompanying community risk assessment (CRA) has been developed to comply with Ontario Regulation 378/18: CRA (O. Reg. 378/18). This regulation, under the FPPA, requires all municipalities in Ontario that existed on July 1, 2019 to complete a CRA no later than July 1, 2024. This regulation requires municipalities to:

- "Complete and review a community risk assessment as provided by this regulation
- Use its community risk assessment to inform decisions about the provision of fire protection services"¹

The City of Burlington is utilizing this fire master planning process to proactively address the applicable legislative requirements defined by O. Reg. 378/18, by preparing a separate CRA as input to the FMP.

The analysis and methodology presented within this FMP has also been informed by current industry best practices including the fire protection standards authored by the National Fire Protection Association (NFPA) and the Public Fire Safety Guidelines (PFSGs) authored by the Office of the Fire Marshal (OFM).

¹ Ontario Regulation 378/18 Community Risk Assessment, Mandatory use, 1. (a) and (b)

2.0

Purpose and Scope

The City of Burlington is committed to strategic planning to guide Council's decision-making with respect to all services and programs provided by the City. Research into preparing this FMP confirms this commitment to the delivery of fire services through examples that include the Council approved 2003 Master Fire Plan (BFD-01-03), the 2007 Master Fire Plan Update (BFD-02-07), and the 2016 Community Risk Assessment and Standards of Cover report (BFD-03-16).

This current fire master planning process was recommended by Council to identify the strategic priorities necessary to sustain an efficient and effective fire service based on the City's projected community growth.

The scope of this FMP is summarized as:

- Development of a Community Risk Assessment as defined by O. Reg. 378/18 to be utilized to inform the analysis of all current fire protection services
- Consider the input of stakeholder consultation including community, Council, corporate and department staff
- Analysis of all current services and programs provided by the Burlington Fire Department in comparison to legislative requirements, current industry standards and best practices
- Through research and analysis, findings from community risk assessments, identify opportunities with a focus on continuous improvement, service optimization and innovation

Ultimately the objective of this FMP is to present Council with a comprehensive independent analysis of the City's current and future fire service needs and circumstances, as defined by the FPPA. This analysis is supported by defined strategic priorities, applicable recommendations and a proposed implementation plan to further inform Council's decision-making process with respect to the continued delivery of fire service and programs.

3.0

Related Plans and Reports

Research into preparing this FMP identified related corporate and departmental plans and reports that are applicable to this fire master planning process. The following sections provide a high-level overview introducing the specific relevance to informing this FMP.

3.1

Burlington's Strategic Plan 2015 – 2040

Historically, the City of Burlington conducted a strategic planning process at the beginning of each council term. In 2016, this process changed when Burlington's Strategic Plan 2015-2040 was adopted by Council. In contrast to the City's previous strategic planning process this 25 year plan is a blue print to guide the future of the City as it continues to grow.

The City's current strategic plan recognizes the shift from greenfield development to growing in place (intensification) and the need for proactive city-building. The plan defines city-building as "using all of the tools available to the City Council, working with community partners to define how we grow, and to actively shape the physical, social, economic and cultural fabric of the city as we grow"². The plan identifies four key strategic directions including:

1. A City that Grows: The City of Burlington attracts talent, good jobs and economic opportunity while having achieved intensification and balanced, targeted population growth for youth, families, newcomers and seniors
2. A City that Moves: People and goods move throughout the city more efficiently and safely. A variety of convenient, affordable and green forms of transportation that align with regional patterns are the norm. Walkability within new/transitioning neighbourhoods and the downtown are a reality
3. A Healthy and Greener City: The City of Burlington is a leader in the stewardship of the environment while encouraging healthy lifestyles

² Burlington Strategic Plan 2015-2040, page 2

4. An Engaging City: Community members are engaged, empowered, welcomed and well-served by their city. Culture and community activities thrive, creating a positive sense of place, inclusivity and community

These directions are to be supported through a range of tools including the City's Official Plan and related plans such as the Transportation Master Plan, Asset Management Plan, and Community Energy Plan.

The Strategic Plan identifies several strategic objectives which have direct relevance to the preparation of this FMP. This includes focused and projected population growth and targeted intensification, as well as actively engaging with residents as part of the decision-making process.

3.2

2018-2022 Burlington Plan: From Vision to Focus

To assist in the objective of implementing the Strategic Plan 2015 to 2040, the City has developed a five-year work plan that identifies focus areas, goals, key actions, and performance indicators. The 2018-2022 Burlington Plan: From Vision to Focus identifies five focus areas:

1. Increasing economic prosperity and community responsive growth management
2. Improving integrated city mobility
3. Supporting sustainable infrastructure and a resilient environment
4. Building more citizen engagement, community health and culture
5. Delivering customer centric services with a focus on efficiency and technology transformation

Focus area 1 noted above includes a 'key action' that states "Develop a Fire Master Plan to support the growth and change within the city". In addition to this key action this fire master planning process has been informed by additional goals as identified in the 2018-2022 Plan including:

- Maintaining and continually developing a safe city
- Improving community engagement with diverse communities
- Maintaining the current urban/rural boundary
- Ensuring efficient, effective and economical service delivery

- Enhancing City services and delivery of citizen self-service options through technology
- Ensuring financial sustainability with a reasonable tax rate increase that focuses on citizen services
- Increasing community and customer input into how the city delivers services
- Developing employees to fill management vacancies from within

3.3

2020 City of Burlington Official Plan (Interim Version Feb. 2021)

The Official Plan (OP, 2020) discussed further in **Section 8.10** of this report, provides policy direction on land use, development and resources matters to guide future development of the City, including the accommodation of population and employment growth within targeted locations of the Urban Area. The City's Primary Growth Areas, are distinct areas of the City where the majority of the forecasted growth will be accommodated.

The City's population and employment forecasts are premised on the adequacy of infrastructure and public service facilities to support growth in appropriate locations. The OP, 2020 also requires infrastructure, associated services and public service facilities, to support the comprehensive implementation of the Plan.

Public service facilities are defined in the OP, 2020 as land, building or structures for the provision of programs and services provided by government or other body, which includes police/fire services, libraries, schools, parks, community centres, hospitals and long-term care facilities. It is important that public service facilities, including fire services, are considered at a neighbourhood and city-wide scale, through future growth and development planning to serve the current and future needs of residents and businesses.

Through planning for future growth and development, the phasing of priorities should be established to describe how investments in existing and new infrastructure and public service facilities will be made to support the City's vision for growth, specifically in the Primary Growth Areas.

2016 Community Risk Assessment and Standards of Cover

In 2016, the BFD completed an extensive analysis of the City's fire risks and fire suppression deployment capabilities. This analysis was guided by a process governed by the Commission on Fire Accreditation International (CFAI). The 2016 Community Risk Assessment and Standards of Cover was approved by Council (BFD-03-16).

The CFAI is operated under the Centre for Public Safety Excellence (CPSE), and is a not-for-profit organization founded by the International Association of Fire Chiefs (IAFC) and the International City/County Management Association (ICMA). The mission of the CPSE is "to lead the fire and emergency services to excellence through the continuous quality improvement process of accreditation, credentialing and education"³. The objective of the CFAI program is to define an accreditation system that is a credible, achievable, usable, and realistic model. The ultimate CFAI goal is to provide an accreditation process to improve the abilities of municipalities to both understand and recognize their respective community fire risks, provide balanced public/private involvement in reducing these risks and improve the overall quality of life for community members using the accreditation model. Of importance to this fire master planning process is the CFAI strategy that seeks to achieve '**continuous improvement**' in the delivery of services.

The City of Burlington's 2016 Community Risk Assessment and Standards of Cover was facilitated by the CFAI accreditation process.

In addition to updating the previous performance measures that were presented and approved by Council through the 2003 Fire Master Plan the 2016 Community Risk Assessment and Standards of Cover report outlined 11 recommendations, including:

1. Improve pre-planning and building risk assessment. The department currently assigns five pre-plans to each fire captain annually. All building stock above moderate risk should undergo a pre-plan and risk assessment on a maximum five-year cycle.
2. Adopt a building risk assessment tool. In order to facilitate a review of building stock within the high and maximum category the department needs to adopt a tool that

³ <https://cpse.org/cpse-overview/>

will measure building risk in a reliable and valid fashion. The scores for each building will require input into the department's records management system to ensure that the optimum resources are dispatched to allow for effective, efficient, and safe emergency response operations.

3. Use global positioning system (G.P.S.) to measure motor vehicle collision response times. Motor vehicle collisions on Queen Elizabeth Way and 400-series highways.
4. Risk-based fire safety education. Develop fire safety education programs for high-risk neighbourhoods/ residents.
5. Fire prevention. Conduct an analysis of current fire prevention inspection cycles versus NFPA and bring business cases forward for resources to increase inspection cycles.
6. Track vertical response time. Initiate a process to measure vertical response time for any building above six storeys in height.
7. Investigate expanding automatic-aid agreements. Concentration measures in the southeast corner and west end of the city could be improved by implementing automatic response from neighbouring municipalities.
8. Seek funding for Fire Station No. 9. Intensification has increased the fire risk in the core of the city. Prepare a business case for the addition of a new fire station in the core. This proposal would not include a request for new staff. The current staffing complement would be aligned to better match risk.
9. Station re-location study. Funding for a station relocation study was approved in the 2015 budget. Two fire stations were identified: Station 3 located at 1044 Waterdown Road and Station 4 located at 711 Appleby Line. The Fire Chief will work with the City's realty manager to identify new sites that will improve response time performance.
10. Building stock assessment. The scores for each building will require input into the department's records management system to ensure that the optimum resources are dispatched to allow for effective, efficient, and safe emergency response operations. This will be achieved through the use of available I.R.M. tools or similar fire risk tools.
11. Dispatch and data management procedures. Create an improved method of recording / measuring enroute times, change dispatch response types to better reflect risk, performance time reporting for turnout time.

Where applicable, the analysis presented within this FMP will consider the analysis presented within 2016 Community Risk Assessment and Standards of Cover report.

3.5

2019 Fire Underwriters Survey™ (FUS Report)

The “Fire Underwriters Survey™ (FUS) is a national organization administered by Opta Information Intelligence, formerly C.G.I. Insurance Business Services, formerly the Insurers' Advisory Organization and Canadian Underwriters Association. FUS provides data on public fire protection for fire insurance statistical work and underwriting purposes of subscribing insurance companies. Subscribers of Fire Underwriters Survey represent approximately 85 percent of the private sector property and casualty insurers in Canada.

The FUS oversees a program referred to as the Tanker Shuttle Accreditation. This program recognizes the capacity of a municipal fire department to provide an alternative water supply to be used for firefighting purposes in the absence of a municipally operating water supply system (hydrants). FUS recognizes both a “standard” and “superior” level of service. To be credited for the “standard” tanker shuttle program a fire department must be able to access an alternative water supply 24 hours per day and 365 days per year. The fire department must have the ability to refill tankers from the alternative water supply using drafting techniques that requires a pump with a minimum capacity of 450 LPM (100 Igpm) at 275-415 kPa (40-60 psi).

The “superior” tanker shuttle accreditation must meet all the requirements specified for Standard Tanker Shuttle Service and must exceed those requirements in several key areas, including:

- The fire department must be able to prove through testing that the specified requirements of Superior Tanker Shuttle Service can be met.
- For personal lines insurance, the fire department must be able to deliver a flow rate of not less than 950 LPM (200 Igpm) within 5 minutes of arriving at the test site with the first major piece of apparatus (wheel stop).
- For commercial lines insurance, the fire department must be able to deliver a flow rate of not less than 1900 LPM (400 Igpm) within 5 minutes of arriving at the test site with the first major piece of apparatus (wheel stop).

- The fire department must be able to deliver the flow rate which will be accredited within 10 minutes of arriving at the test site with the first major piece of apparatus (wheel stop).
- The volume of water available for firefighting must be adequate to sustain the accredited flow rate for a duration in accordance with the Fire Underwriters Survey Water Supplies for Public Fire Protection⁴.

Based on correspondence received from FUS dated September 19, 2019, the City of Burlington is currently accredited with “Superior Tanker Shuttle” service status for residential properties within eight kilometers (by road) and commercial properties within five kilometers (by road) of Fire Station 5. This accreditation expires October 4, 2024. A 2014 correspondence from FUS indicates fire hydrant protection is provided for properties in the sub districts identified by FUS as Fire Stations 1, 2, 3, 4, 6, 7 and 8. Properties outside of these sub districts are classified as “unprotected” by fire hydrants. Further discussion on tanker shuttle accreditation can be found in **Section 8.0 - Operations Division**.

⁴ Superior Tanker Shuttle Service. Fire Underwriters Survey. Retrieved September 26, 2021 from <https://fireunderwriters.ca/Grading/Superior-Tanker-Shuttle-Service>

4.0

Fire Master Plan Process

The development of this FMP has been informed by PFSG 03-02-13 Master Planning Process for Fire Protection Services. This includes analysis of community fire risk and future community growth. The efficiency and effectiveness of each division within the BFD have been analyzed, along with emergency response and station locations, staffing resources and deployment procedures, fire prevention and public education programs, apparatus and all related requirement, and service agreements. The following guiding principles of PFSG 03-02-13 are applicable to this fire master planning process:

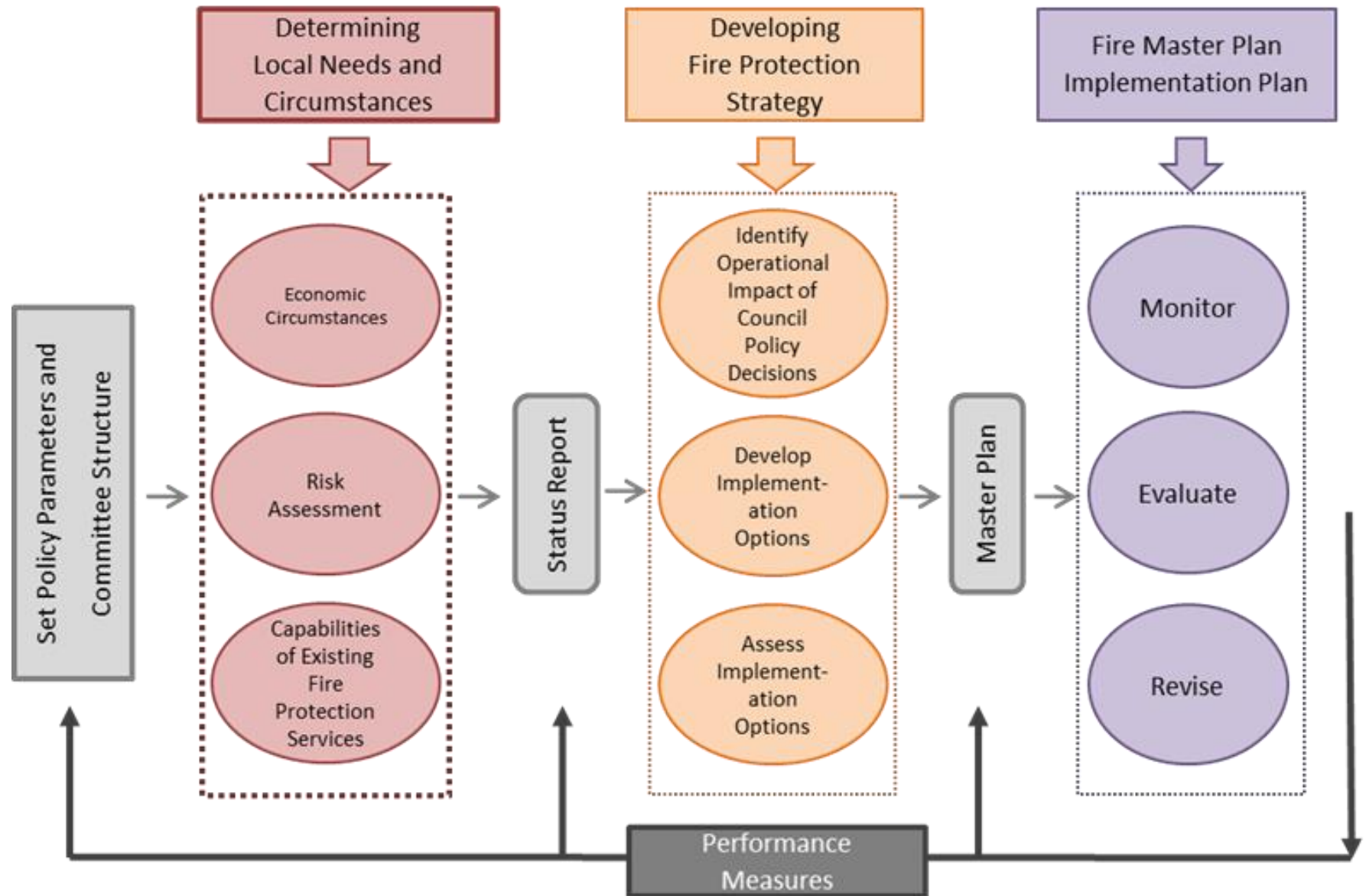
- “The residents of any community are entitled to the most effective, efficient and safe fire services possible
- The content of existing collective agreements will be respected and the collective bargaining process will be recognized as the appropriate channel for resolving labour relations issues under collective agreements and the Fire Protection and Prevention Act, 1997
- Collective bargaining issues affecting public safety will be identified
- Those responsible must work within these parameters in making recommendations for improving municipal fire services”

This FMP has also been informed by PFSG 01-01-01 Fire Protection Review Process that identifies factors to be considered in conducting the fire protection review process including:

- “The overall objective of any fire protection program is to provide the optimum level of protection to the community, in keeping with local needs and circumstances
- Extensive research has demonstrated that there are a variety of factors that will have an impact on the fire department's capacity to fulfill this objective
- Conversely, there are many different options that a municipality may pursue to improve the efficiency and effectiveness of its fire protection system
- Local circumstances will have a profound effect on which factors are most important for any one municipality, and what options are available for its fire protection system. Selecting among these options is an extremely complex task. Success will require a combination of specialized expertise in fire protection, and a thorough appreciation of your municipality's economic, social and political circumstances.”

Figure 1 reflects the framework for developing a Fire Master Plan for optimizing public fire safety.

Figure 1: Master Fire Plan Framework (PFSG 01-01-01)



4.1 Applicable Legislation

In addition to the Community Risk Assessment, the analysis and findings of this fire master planning process have been informed by the applicable legislation including the Fire Protection and Prevention Act, 1997 (FPPA) the Occupational Health and Safety Act, R.S.O. 1990 (OHSA), guidelines as authored by the Office of the Fire Marshal and Emergency Management (OFMEM), industry standards as authored by the National Fire Protection Association (NFPA), and Dillon's knowledge of current industry best practices, as garnered from our experience working with municipalities across Canada.

4.1.1 Fire Protection and Prevention Act, 1997

Within the Province of Ontario, the relevant legislation for the operation of a fire department is contained within the Fire Protection and Prevention Act, 1997 (FPPA).

Appointment of the Fire Marshal is issued by the Lieutenant Governor. The FPPA outlines the powers of the Fire Marshal and the responsibilities of municipalities to provide fire protection services within the Province of Ontario.

While all legislation should be read and comprehended in its entirety, the following summarizes applicable sections of the FPPA for reference purposes to this fire master planning process.

Table 1: FPPA Definitions – Part 1

Part 1	Definitions
Definitions	<p>1.(1) In this Act,</p> <p>“fire chief” means a Fire Chief appointed under section 6 (1), (2) of (4); (“chef des pompiers”)</p> <p>“fire code” means the fire code established under Part IV; (“code de prevention des incendies”)</p> <p>“fire department” means a group of firefighters authorized to provide fire protection services by a municipality, group of municipalities or by an agreement made under section 3; (“service d’ incendie”)</p> <p>“Fire Marshal” means the Fire Marshal appointed under subsection 8 (1); (“commissaire des incendies”)</p> <p>“fire protection services” includes fire suppression, fire prevention, fire safety education, communication, training of persons involved in the provisions of fire protection services, rescue and emergency services and the delivery of all those Services; (“services de protection contre les incendies”)</p> <p>“municipality” means the local municipality as defined in the Municipal Act, 2001; (“municipalite”)</p> <p>“prescribed” means prescribed by regulation (“prescript”)</p> <p>“regulation” means a regulation made under this Act; (“reglement”)</p> <p>“volunteer firefighter” means a firefighter who provides fire protection services either voluntarily or for a nominal consideration, honorarium, training or activity allowance; (“pompier volontaire”)</p>
Application of definition of firefighter	<p>(3) The definition of firefighter in subsection (1) does not apply to Part IX. 1997, c. 4, s. 1 (2)</p>

Part 1	Definitions
Automatic aid agreements	<p>(4) For the purposes of this Act, an automatic aid agreement means any agreement under which,</p> <p>(a) a municipality agrees to ensure the provision of an initial response to fires and rescues and emergencies that may occur in a part of another municipality where a fire department in the municipality is capable of responding more quickly than any fire department situated in the other municipality, or</p> <p>(b) a municipality agrees to ensure the provision of a supplemental response to fires, rescues and other emergencies that may occur in a part of another municipality where a fire department situated in the municipality is capable of providing the quickest supplemental response to fires, rescues and other emergencies occurring in the part of the other municipality. 1997, c. 4, s. 1 (4)</p>

Table 2: FPPA Definitions – Part 2

Part 2	Responsibility for Fire Protection Services
Municipal responsibilities	<p>2.(1) Every municipality shall</p> <p>(a) establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention, and</p> <p>(b) provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.</p>
Services to be provided	<p>(3) In determining the form and content of the program that it must offer under clause(1)(a) and the other fire protection services that it may offer under clause (1)(b), a municipality may seek the advice of the Fire Marshal</p>
Automatic aid agreements	<p>(6) A municipality may enter into an automatic aid agreement to provide or receive the initial or supplemental response to fires, rescues and emergencies.</p>

Part 2	Responsibility for Fire Protection Services
Review of municipal fire services	(7) The Fire Marshal may monitor and review the fire protection services provided by municipalities to ensure that municipalities have met their responsibilities under this section, and if the Fire Marshal is of the opinion that, as a result of a municipality failing to comply with its responsibilities under subsection (1), a serious threat to public safety exists in the municipality, he or she may make recommendations to the council of the municipality with respect to possible measures the municipality may take to remedy or reduce the threat to public safety.
Failure to provide services	(8) If a municipality fails to adhere to the recommendations made by the Fire Marshal under subsection (7) or to take any other measure that in the opinion of the Fire Marshal will remedy or reduce the threat to public safety, the Minister may recommend the Lieutenant Governor in Council that a regulation be made under subsection (9).
Regulation	(9) Upon the recommendation of the Minister, the Lieutenant Governor in council may make regulations establishing standards for fire protection services in municipalities and requiring municipalities to comply with the standards.
Fire departments	(1) A fire department shall provide fire suppression services and may provide other fire protection services in a municipality, group of municipalities or in territory without municipal organization. 1997, c. 4, s. 5 (1)
Same	(2) Subject to subsection (3), the council of a municipality may establish more than one fire department for the municipality. 1997, c. 4, s. 5 (2)
Exception	(3) The council of a municipality may not establish more than one fire department if, for a period of at least 12 months before the day this Act comes into force, fire protection services in the municipality were provided by a fire department composed exclusively of full-time firefighters. 1997, c. 4, s. 5 (3)
Same	(4) The councils of two or more municipalities may establish one or more fire departments for the municipalities. 1997, c. 4, s. 5 (4)

Part 2	Responsibility for Fire Protection Services
Fire chief, municipalities	6. (1) If a fire department is established for the whole or part of a municipality or for more than one municipality, the council of the municipality or the councils of the municipalities, as the case may be, shall appoint a Fire Chief for the fire department.
Same	(2) The council of a municipality or the councils of two or more municipalities may appoint a Fire Chief for two or more fire departments.
Responsibility to council	(3) A Fire Chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services
Powers of a fire chief	(5) The Fire Chief may exercise all powers assigned to him or her under this Act within the territorial limits of the municipality and within any other area in which the municipality has agreed to provide fire protection services, subject to any conditions specified in the agreement.

Table 3: FPPA Definitions – Part 3

Part 3	Fire Marshal
Appointment of Fire Marshal	8 (1) There shall be a Fire Marshal who shall be appointed by the Lieutenant Governor in Council.

Part 3	Fire Marshal
Powers of Fire Marshal	<p>9.(1) the Fire Marshal has the power,</p> <ul style="list-style-type: none"> (a) to monitor, review and advise municipalities respecting the provision of fire protection services and to make recommendations to municipal councils for improving the efficiency and effectiveness of those services. (b) to issue directives to assistants to the Fire Marshal respecting matters relating to this Act and the regulations. (c) to advise and assist ministries and agencies of government respecting fire protection services and related matters. (d) to issue guidelines to municipalities respecting fire protection services and related matters. (e) to co-operate with anybody or person interested in developing and promoting the principles and practices of fire protections services. (f) to issue long service awards to persons involved in the provision of fire protection services. (g) to exercise such other powers as may be assigned under this Act or as may be necessary to perform any duties assigned under this Act.

Part 3	Fire Marshal
Duties of Fire Marshal	<p>9.(2) It is the duty of the Fire Marshal,</p> <p>(a) to investigate the cause, origin and circumstances of any fire or of any explosion or condition that in opinion of the Fire Marshal might have caused a fire, explosion, loss of life, or damage to property.</p> <p>(b) to advise municipalities in the interpretation and enforcement of this Act and the regulations.</p> <p>(c) to provide information and advice on fire safety matters and fire protection matters by means of public meetings, newspaper articles, publications, electronic media and exhibitions and otherwise as the Fire Marshal considers available.</p> <p>(d) to develop training programs and evaluation systems for persons involved in the provision of fire protection services and to provide programs to improve practices relating to fire protection services.</p> <p>(e) to maintain and operate a central fire college.</p> <p>(f) to keep a record of every fire reported to the Fire Marshal with the facts, statistics and circumstances that are required under the Act.</p> <p>(g) to develop and maintain statistical records and conduct studies in respect of fire protection services.</p> <p>(h) to perform such other duties as may be assigned to the Fire Marshal under this Act.</p>

The FPPA includes a series of important Ontario Regulations (O. Reg.) that are applicable to this fire master planning process including:

- O. Reg. 213/07: Ontario Fire Code
- O. Reg. 365/13: Mandatory Assessment of Requests and Complaints
- O. Reg. 364/13: Mandatory Inspections and Fire Drills in Vulnerable Occupancies
- O. Reg. 378/18: Community Risk Assessment

4.1.2 Occupational Health and Safety Act (OHSA)

The Occupational Health and Safety Act, R.S.O. 1990 requires every employer to, “take every precaution reasonable in the circumstances for the protection of the worker”⁵. The OHSA provides for the appointment of committees and identifies the Ontario Fire Services Section 21 Advisory Committee as the advisory committee to the Minister of Labour with the role and responsibility to issue guidance notes to address firefighter-specific safety issues within Ontario.

Firefighter safety is a priority considering the activities and services to be provided by a fire department. This must include the provision of department policies and procedures/guidelines that are consistent with the direction of the OHSA Section 21 Guidance Notes for the fire service.

4.2 Industry Standards and Best Practices

As indicated above, the FPPA requires that a municipality “establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention; and provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.”

Within the Province of Ontario there are no legislated service level performance standards that a municipality must comply with in delivering fire services.

It is the responsibility of municipal Council, following recommendations provided by the Fire Chief and/or Office of the Fire Marshal to evaluate and determine its “needs and circumstances” and decide the standard, or service level appropriate for the municipality. This section provides an overview of applicable industry standards best practices specific to providing an effective community fire service.

4.2.1 National Fire Protection Association

The National Fire Protection Association (NFPA) is a global non-profit organization, established in 1896. The NFPA's vision is to be the “leading global advocate for the elimination of death, injury, property and economic loss due to fire, electrical and

⁵ Occupational Health and Safety Act, RSO. 1990, c. O.1 Part III s. 25(2)(h)

related hazards.” With a membership that totals more than 50,000 individuals around the world, the NFPA is recognized as a world leader of fire protection and prevention and an authoritative source on fire safety and service delivery.

The NFPA delivers more than “300 consensus codes and standards, research, training, education, outreach and advocacy” designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation. It has more than 250 technical code and standard development committees that are comprised of over 9,000 volunteers. Members vote on proposals and revisions in a process that is accredited by the American National Standards Institute.

Over the past decade, following the direction of the O.F.M., Ontario fire services have been transitioning to NFPA standards, from the previous Ontario Fire Services Standards to the NFPA Professional Qualifications (NFPA Pro-Qual) Standards for their training and programs to guide the services they provide. NFPA standards are recognized within the fire service as an industry best practice. Where applicable NFPA standards are referenced within this FMP as a current industry best practice.

4.2.2 National Institute of Standards and Technology

The National Institute of Standards and Technology (NIST) was founded in 1901 as a non-regulatory agency within the United States Department of Commerce. NIST's mission is to promote United States innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.

In April of 2010, NIST released their Technical Note #1661 “Report on Residential Fireground Field Experiments” reflecting a collaborative research analysis conducted by leading fire service agencies. The analysis within this report investigated the effects of varying crew sizes, apparatus arrival times and response times on firefighter safety, overall task completion and interior residential tenability using realistic residential fires.

The result of a similar study identified in Technical Note #1797 “Report on High-Rise Fireground Field Experiments” was released in April 2013 that assessed the deployment of firefighting resources to fires in high-rise buildings. These studies are both examples of the technical research and analyses that are taken into consideration to develop and update the NFPA standards referenced within this FMP.

4.2.3 Institution of Fire Engineers – Vision 20/20 Community Risk Reduction

The Institution of Fire Engineers is a global not-for-profit organization that was established in 1918 to “promote, and improve the science and practice of Fire Engineering, Fire Prevention, and Fire Extinction, and all operations and expedients within”⁶. Vision 20/20 – Community Risk Reduction is a project being hosted by the Institute of Fire Engineers representing current industry best practice in community risk reduction.

4.2.4 Commission on Fire Accreditation International (CFAI)

The Centre for Public Safety Excellence (CPSE) serves as a governing body for two organizations that offer accreditation, education and credentialing: the CFAI and the Commission on Professional Credentialing (CPC).

The CFAI defines itself as an organization that is committed to assisting fire and emergency service agencies throughout the world in achieving excellence through self-assessment and accreditation to provide continuous quality improvement and the enhancement of service delivery to their communities.

The objective of the CFAI program is to define an accreditation system that is a credible, achievable, usable, and realistic model. The ultimate CFAI goal is to provide an accreditation process to improve the abilities of municipalities to both understand and recognize their respective community fire risks, provide balanced public/private involvement in reducing these risks and improve the overall quality of life for community members using the accreditation model. Of importance to this fire master planning process is the CFAI strategy that seeks to achieve “continuous improvement” in the delivery of fire protection services.

4.2.5 NFPA Fire and Life Safety Ecosystem™

The NFPA Fire and Life Safety Ecosystem is a framework of eight elements that work in conjunction with one another with the collective goal of risk reduction. Together, they

⁶ Institution of Fire Engineers USA Branch. Retrieved September 26, 2021, from www.IFE-USA.ORG

promote the prevention of fires and other hazard-related loss, injuries and fatalities. The eight components that comprise this framework include:

1. Government responsibility
2. Development and use of current codes
3. Referenced standards
4. Investment in safety
5. Skilled workforce
6. Code compliance
7. Preparedness and emergency response
8. Informed public

This system is premised on the notion that the cause of all life safety incidents can be traced back to the breakdown of one or more of these components. The Fire and Life Safety Ecosystem recognizes that fire prevention is multifaceted and there are various key components that need to work in tandem cultivate an environment and culture of fire safety. This FMP supports a multifaceted approach to fire prevention and, where applicable, will present strategies to enhance the fire prevention and public education programming currently provided by the BFD.

4.3 Public Fire Safety Guidelines (PFSG)

The FPPA outlines the roles and responsibilities of the Office of the Fire Marshal (OFM). This legislation assigns specific powers to the OFM, which includes “issue guidelines to municipalities respecting fire service and related matters”.⁷ All OFM. powers are outlined above in Table 3: FPPA Definitions – Part 3, for reference.

Currently, the OFM is conducting a comprehensive review of all PFSGs. During their review, the OFM has advised Ontario fire services that the existing PFSGs can be referred to for reference purposes. Where applicable, this FMP will identify relevant PFSGs for reference. These documents are no longer available on the OFM website but can be requested.

⁷ Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4 Part III s. 9 (d)

4.3.1

Comprehensive Fire Safety Effectiveness Model (CFSEM)

Under the leadership of the OFM, the Province of Ontario developed the Comprehensive Fire Safety Effectiveness Model (CFSEM) (PFSG 01-02-01). The CFSEM includes seven key factors which affect fire losses in Ontario. These include:

1. Fire risk
2. Fire prevention program effectiveness
3. Public attitude
4. Detection capabilities
5. Built-in suppression capabilities
6. Intervention time
7. Fire ground effectiveness

Related to these factors is a fire service planning strategy known as the 'Three Lines of Defence'. The Three Lines of Defence model recognizes that there are steps that can be taken to reduce the risk of a fire including the probability of a fire occurring and the consequence of that fire.

The 'Three Lines of Defence' model includes:

1. Public Education and Prevention

Educating residents of the community on means for them to fulfill their responsibilities for their own fire safety is a proven method of reducing the incidence of fire. Only by educating residents can fires be prevented and can those affected by fires respond properly to save lives, reduce injury and reduce the impact of fires.

2. Fire Safety Standards and Enforcement

Ensuring that buildings have the required fire protection systems, safety features, including fire safety plans, and that these systems are maintained, so that the severity of fires may be minimized;

3. Emergency Response

Providing well trained and equipped firefighters directed by capable officers to stop the spread of fires once they occur and to assist in protecting the lives and safety of residents. This is the failsafe for those times when fires occur despite prevention efforts.

Historically, the fire service has focused on firefighters and fire suppression. The CFSEM emphasizes the importance and value of preventing a fire. This is important from both an economic and public safety perspective. This model recognizes that developing programs and providing resources to implement the first line of defence (a proactive public education and fire prevention program) can be the most effective strategy to reduce and potentially minimize the need for the other lines of defence.

The analysis and recommendations contained within this FMP prioritize the application of the 'Three Lines of Defence' and outlines recommendations considering a review of fire prevention and public education with consideration to optimizing the first two lines of defence. When the first two lines of defence are effective, it has a positive effect on community health and wellbeing. The third line of defence, emergency response, is required when the first two lines of defence fail.

4.4 Strategic Priorities and Recommendations

The City's RFP-202-19 specifically references that "The plan outcomes must establish strategic priorities complete with actions plans"⁸. As such, this FMP includes strategic priorities that have been informed by the research and analysis that was completed to inform this FMP. These strategic priorities are intended to provide Council with a framework for informing its decision-making process with respect to the overall delivery of fire protection services within the City.

4.4.1 Proposed Strategic Priorities

The fire master planning process is intended to provide a strong focus on developing and implementing strategies that support the provision of the most effective and efficient delivery of fire protection services that provide the most value to the community. Through the experience of our clients, we have found that identifying guiding principles, or strategic priorities, to guide the decision-making process is a valuable tool for a municipal Council when considering the recommendations of a Fire Master Plan.

⁸ City of Burlington R.F.P. -202-19 Master Fire Plan and Community Risk Assessment, Requirements, (t) page 17

Our analyses in preparing this FMP has included an assessment of compliance with applicable legislation, review of related reports and plans, review of all current operations of the BFD and informed by our knowledge of current industry best practices. Collectively, this analysis has been utilized to identify the following strategic priorities for Council's consideration as part of this fire master planning process. The proposed strategic priorities include:

- I. As required by Ontario Regulation 378/18: Community Risk Assessments the City of Burlington is committed to utilizing community fire risk analysis to inform all decisions associated with the delivery of fire protection services within the City of Burlington.
- II. The Burlington Fire Department will continue to prioritize the optimization of the first two lines of defence, including public education and fire prevention, and the utilization of fire safety standards and fire code enforcement as the foundation of providing a comprehensive fire protection program within the City of Burlington.
- III. The City of Burlington will continue to prioritize strategies that support the sustainability of a 'composite fire department' and the delivery of fire protection services that provide the most effective and efficient level of services resulting in the best value for the community.
- IV. The City of Burlington will continue to prioritize the fire protection needs to meet the planned growth and intensification needs of the City.

At the conclusion of the analysis for each division, an overarching goal is presented followed by supporting objectives and recommended actions in support of the strategic priorities.

4.5 Stakeholder Consultation

Internal and external stakeholder consultation is a core component of a comprehensive fire master planning process. This Fire Master Plan was directly informed by consultation through the following activities:

- A Council Educational Workshop (November 7, 2019)
- Internal stakeholder interviews with City and fire department staff
- An interview with the executive from Burlington Professional Firefighters Association, Local 1552

- Interviews with volunteer firefighters
- Community stakeholder interviews
- A two-stage Council reporting process

The interviews with City corporate, fire department, Council, Local 1552 executive and community stakeholders sought informal feedback in the form of identifying the current Strengths, Weaknesses, Opportunities and Challenges of the Burlington Fire Department.

4.5.1 Community Stakeholder Interview Summary

As part of the Community Risk Assessment and Fire Master Plan process, Dillon conducted thirteen telephone interviews with representatives from BFD key community stakeholders. The input gathered through the stakeholder interviews was utilized to further inform the preliminary findings of the Fire Master Plan at a high-level to provide insight into the strengths and weaknesses of the BFD from the broader community.

Overall, the feedback received from these community stakeholders reflected a positive, collaborative working relationship between the Burlington community and the Burlington Fire Department. The majority of stakeholders have experienced positive interactions with BFD personnel noting that department staff were accessible, responsive, helpful and informative.

In addition to these strengths, a portion of feedback received was able to underline some key opportunities for the improvement of services provided by the BFD. Specifically, when asked if the services provided by the BFD aligned with the needs of the participants', some respondents noted that the BFD could be more proactive in highlighting the services they provide to community groups, and a relationship of reciprocity could be enhanced through the sharing of pertinent information relevant to both parties.

One participant highlighted the importance of continuing to foster relationships with the broader community to understand cultural differences to communicate more effectively. Industry best practices suggest planning and targeting public fire and life safety efforts around the needs of the fire department and the characteristics of the community of which it serves. The BFD serves a diverse and multicultural community. It was identified as part of the community stakeholder engagement process that

consideration of different cultural practices is paramount to the development of targeted education programs that foster a safe community for all. Diversity and equity were also noted as a key consideration for inclusion in department policies, recruitment practices, and training. Some of this is already being done by the BFD and should continue and be built upon, particularly as the community grows and changes.

Participants noted a very positive working relationship with the BFD in the review and development of fire safety plans, evacuation planning, the building permit process, and education.

Some participants provided feedback on how fire safety education materials could be delivered to senior populations. For example, at present, one participant noted that better communication is needed in terms of which services can be provided to seniors throughout the community. This participant suggests continuing to expand its partnerships with groups and organizations within the community that serve senior populations directly in their homes to disseminate valuable public fire and life safety information. Many seniors are currently receiving groceries from volunteers due to the COVID-19 pandemic, having products delivered to their front doors. There may be an opportunity for the BFD to provide these volunteers with educational information as part of the grocery delivery service. Some of this is already being done by the BFD and should continue and be built upon, particularly as the community grows and changes.

It was also suggested that some areas of the community would benefit from more fire prevention and education activities in rural areas where there are fire risks related to agricultural activities and barn fires. These participants suggested that the fire department continue to expand on public education in the rural area. Some of this is already being done by the BFD and should continue and be built upon, particularly as the community grows and changes.

A municipal fire department stakeholder who receives dispatch services from BFD through a formalized agreement was also interviewed as part of this engagement. Overall, a positive working relationship with open communication channels was described. They also expressed interest to look for opportunities to continue to enhance policies, procedures and processes.

The stakeholder engagement interviews highlight the positive, collaborative working relationships the BFD has already cultivated within the community and that there is an

opportunity to continue to build and foster community relationships and partnerships in support of additional community risk reduction efforts.

4.6

Community Risk Assessment (FPPA; O. Reg 378/18)

This section summarizes key aspects of the Community Risk Assessment (CRA) and how the risk conclusions of the CRA inform the comprehensive analysis of the existing, and future fire protection needs of the City of Burlington through the development of a Fire Master Plan.

In May 2018, the Ministry of the Solicitor General (previously the Ministry of Community Safety and Correctional Services) adopted O. Reg. 378/18 under the FPPA, which came into effect on July 1, 2019. This regulation requires all municipalities in Ontario to develop a CRA prior to July 1, 2024. It also requires municipalities to “use its community risk assessment to inform decisions about the provisions of fire protection services”.⁹ As required under this regulation, a CRA must include a comprehensive analysis of nine mandatory profiles. These profiles are outlined in further detail later in this **Section 4.6**.

4.6.1

Methodology

The CRA has been developed for the City of Burlington to comply with Ontario Regulation 378/18: Community Risk Assessments. To assist municipalities and fire departments in the process to develop a CRA, the OFMEM developed Technical Guideline-02-2019 (TG-02-2019), which recognizes the value of understanding community fire risk, and the importance of developing fire risk reduction and mitigation strategies using the three lines of defence. The methodology and analysis utilized to develop a CRA for the City of Burlington has been directly informed by TG-02-2019 and applicable industry standards best practices.

It is recommended that the BFD conduct an annual review and a five year comprehensive review of the C.R.A, as required by O.Reg. 378/18, and in line with the guidelines set out in TG-02-2019. This will support the BFD in adapting community fire risk reduction strategies to meet the City’s needs and circumstances as the City continues to grow.

⁹ Ontario Regulation 378/18: Community Risk Assessments, Mandatory Use, Section 1 (b).

4.6.2 Risk Prioritization

The mandatory profile analysis resulted in a series of risk conclusions. These risk conclusions are referred to as a 'Key Finding' or an 'Identified Risk'. In specific circumstances, being those that involve additional jurisdictional or legislative considerations, a risk-related conclusion is referred to as a Special Consideration.

Risk conclusions referred to as an 'Identified Risk' were taken through a risk assignment process based on their probability and consequence as referred to within TG-02-2019. Section 11.1 of the CRA describes how probability levels and consequence levels are developed and translated to risk levels. This resulted in each risk having a risk level (i.e., low, moderate, or high) assigned to assist in the prioritization of risks as part of this Fire Master Plan.

4.6.3 Risk Treatment Process

All risk conclusions were taken through a risk treatment process and aligned with the three lines of defence to inform the analysis and recommendations within this FMP. Dillon developed **Figure 2**, below to illustrate the risk treatment process.

As detailed in the CRA, the risk treatment process includes the application of risk treatment options as identified by NFPA 1300 and TG-02-2019. The risk treatment options include:

1. **Avoid:** Implementing programs and initiatives to prevent a fire or emergency from happening
2. **Mitigate:** Implementing programs and initiatives to reduce the probability and/or consequence of a fire or emergency
3. **Accept:** No specific programs or initiatives will be implemented. Accept the risk and respond if it occurs
4. **Transfer:** Transfer the impact and/or management of the risk to another organization or body

In addition to the four risk treatment options, each risk conclusion was reviewed through the lens of the 'Five Es' as outlined in NFPA 1300, and the Institution of Fire Engineers' Vision 20/20 National Strategy for Fire Loss Prevention. They include:

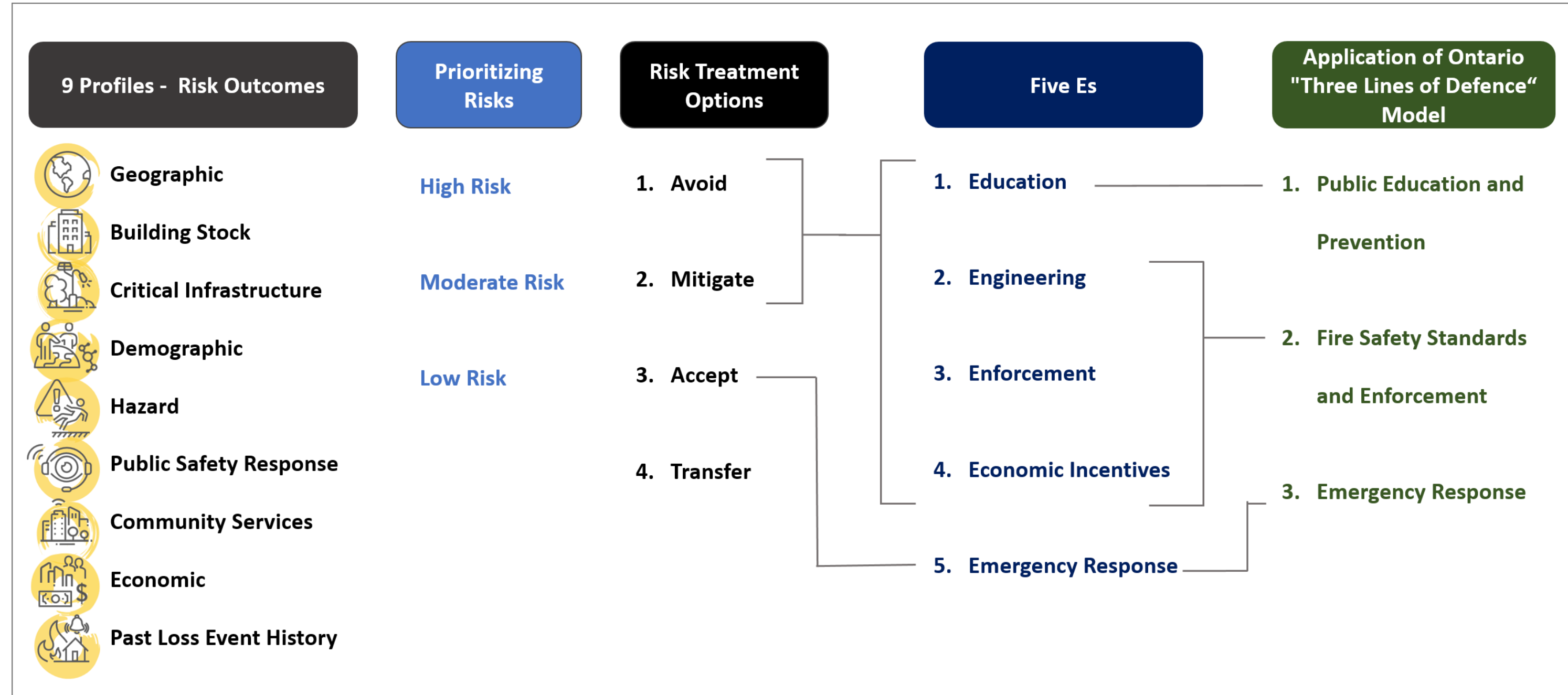
1. **Education:** influences audiences to refrain from risky or unhealthy behavior or take positive action to reduce risk
2. **Enforcement:** reduces risks through enforcing legislation through inspections and fines for noncompliance
3. **Engineering:** includes incorporating new products and technology to modify the environment to prevent or mitigate injuries and deaths
4. **Economic Incentives:** are typically offered to encourage better choices and changes in behaviour
5. **Emergency Response:** effective emergency response can mitigate the effects of unintentional injuries and save lives

After the application of the risk treatment options and ‘Five Es’, the risk conclusions can be aligned with the ‘Three Lines of Defence’. Where applicable, these risk conclusions are referenced throughout this FMP.

The Three Lines of Defence recognizes that there are proactive preventative actions that can be taken to reduce the risk of a fire including the probability of a fire occurring and the consequence of that fire.

NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations contains the minimum requirements related to the stated functions. The focus of NFPA 1730 is to ensure that a Fire Prevention and Public Education Division has a Community Risk Reduction Plan (CRRP) in place and that it is based on the local “needs and circumstances” established through a Community Risk Assessment. This sets the stage for a risk-based assessment of fire prevention and public education initiatives and programs designed to mitigate and/or reduce identified fire risk. For example, Table 6.7 of NFPA 1730 identifies recommended fire inspection frequency cycle which could be refined based on the local context.

Figure 2: Risk Conclusions Application Process



The results of the risk treatment process for both the '**Identified Risks**' and the '**Key Findings**' are shown in **Table 4** and **Table 5**. The process and results are presented in a matrix format to indicate the ways in which the risks can be addressed by the BFD and ultimately for consideration within the analysis and recommendations of this FMP.

Table 4: Treatment Options and Five Es Categorization – Identified Risks

Profile	Identified Risk	Risk Level (Probability x Consequence)	Risk Treatment Option: Avoid Mitigate Accept Transfer	Education For consideration within the proposed Public Education Program	Enforcement For consideration within the proposed Inspection and Enforcement Program	Engineering For consideration within the proposed Inspection and Enforcement Program	Economic Incentive For consideration within the proposed Inspection and Enforcement Program	Emergency Response For consideration within the proposed Emergency Response Program
Geographic	Increasing traffic congestion on the existing road network presents the potential for a delay in emergency response times.	Moderate	Mitigate Accept	No	No	No	No	Yes
Geographic	Motor vehicle-related incidents on the existing road network represent 89.14% (2,946) of all rescue responses of the Burlington Fire Department.	High	Accept	No	No	No	No	Yes
Geographic	The presence of waterways within the City of Burlington creates a potential need for specialized technical ice and water rescue services.	Moderate	Mitigate Accept	Yes	No	No	No	Yes
Geographic	Mount Nemo Conservation Area presents a risk associated with residents and visitors participating in activities that may require specialized rescue services.	Moderate	Mitigate Accept	Yes	No	No	No	Yes
Building Stock	Group C - Residential Occupancies represent 93.53% of the City's existing property stock, and over the five-year period from January 1, 2015 to December 31, 2019 were associated with 72.24% of the structure fires within the City.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Building Stock	The 2016 Census data indicates that 49.51% of the City's Group C-Residential building stock was built prior to the introduction of the 1981 Ontario Fire Code.	High	Mitigate Accept	Yes	Yes	No	No	Yes

Profile	Identified Risk	Risk Level (Probability x Consequence)	Risk Treatment Option: Avoid Mitigate Accept Transfer	Education For consideration within the proposed Public Education Program	Enforcement For consideration within the proposed Inspection and Enforcement Program	Engineering For consideration within the proposed Inspection and Enforcement Program	Economic Incentive For consideration within the proposed Inspection and Enforcement Program	Emergency Response For consideration within the proposed Emergency Response Program
Building Stock	The City currently has 105 buildings defined by the OBC as high-rise buildings with a floor level 18 metres (59 feet) above grade, or 6 storeys. These buildings are distributed throughout the urban area.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Building Stock	The City has 225 buildings with a total building area (footprint) that exceed 50,000 square feet (4,655 square metres). These buildings are predominantly located in the general employment and business corridor along the QEW	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Building Stock	The City of Burlington currently has 43 registered vulnerable occupancies.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Critical Infrastructure	The Burlington Executive Airport presents a number of unique fire related risks associated with aircraft, supporting infrastructure and the potential for specialized fire protection services.	Special Consideration	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Demographic	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. According to the 2016 Census, seniors represent 19.27% of the City's total population.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes

Profile	Identified Risk	Risk Level (Probability x Consequence)	Risk Treatment Option: Avoid Mitigate Accept Transfer	Education For consideration within the proposed Public Education Program	Enforcement For consideration within the proposed Inspection and Enforcement Program	Engineering For consideration within the proposed Inspection and Enforcement Program	Economic Incentive For consideration within the proposed Inspection and Enforcement Program	Emergency Response For consideration within the proposed Emergency Response Program
Demographic	The City's commuter population presents a factor that may impact traffic congestion, and the potential occurrence of motor vehicle accidents within the City.	Moderate	Accept	No	No	No	No	Yes
Past Loss and Event History	Most reported fire related civilian injuries (47) occurred in Group C – Residential Occupancies.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Of the fires occurring in the City over the five-year period from January 1, 2015 to December 31, 2019, the leading cause of unintentionally set fires was due to misuse of ignition source at 37.96% (134 fires), compared to 29.85% in the Province.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Of the fires occurring in the City over the five-year period from January 1, 2015 to December 31, 2019, the second most common cause of unintentionally set fires was due to mechanical/electrical failure at 22.38% (79 fires), compared to 15.43% in the Province.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	For the period from January 1, 2016 to December 31, 2020, there is a higher concentration of all emergency call types near the intersection of Plains Road East and King Road. Further analysis indicates that there are several high-rise buildings in these areas.	High	Mitigate Accept	Yes	Yes	Yes	Yes	Yes

Table 5: Treatment Options and Five Es Categorization – Key Findings

Profile	Key Findings	Risk Treatment Option: Avoid Mitigate Accept Transfer	Education For consideration within the proposed Public Education Program	Enforcement For consideration within the proposed Inspection and Enforcement Program	Engineering For consideration within the proposed Inspection and Enforcement Program	Economic Incentive For consideration within the proposed Inspection and Enforcement Program	Emergency Response For consideration within the proposed Emergency Response Program
Geographic	Bridges, with restrictions or closures, have the potential to reduce the connectivity of the City's road network resulting in the potential for delays in emergency response times.	Accept	No	No	No	No	Yes
Geographic	Grade level rail crossings could create a physical barrier to the connectivity of the City's road network that can potentially result in delays in emergency response times.	Accept	No	No	No	No	Yes
Building Stock	The City includes areas of building stock that have higher density and, as such, greater potential for exposure in the event of a fire. Statistics Canada 2016 census data indicates that 18.65% of the City's building stock is comprised of row housing, this is 9.74% higher than the Province (where 8.91% of provincial building stock is row housing).	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Building Stock	BFD identified several properties within Burlington as having an increased potential for high fire risk fuel load.	Mitigate	Yes	Yes	Yes	Yes	Yes
Building Stock	In addition to registered vulnerable occupancies, the City has 63 schools and 46 identified daycare centres, representing higher fire life-safety risks due to the number of children attending these facilities.	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Building Stock	There are 76 identified heritage buildings within Burlington, many of which were constructed prior to the introduction of the Ontario Fire Code.	Mitigate Accept	Yes	Yes	Yes		Yes
Demographic	The 2016 Census data indicates that children aged 14 and under represent 16.73% of the City's total population.	Mitigate Accept	Yes	No	No	No	Yes
Demographic	Of the City's total population, 13.02% fall into the age range of 55 to 64, representing a population aging towards the seniors' demographic of 65 years or older.	Mitigate Accept	Yes	No	No	No	Yes

Profile	Key Findings	Risk Treatment Option: Avoid Mitigate Accept Transfer	Education For consideration within the proposed Public Education Program	Enforcement For consideration within the proposed Inspection and Enforcement Program	Engineering For consideration within the proposed Inspection and Enforcement Program	Economic Incentive For consideration within the proposed Inspection and Enforcement Program	Emergency Response For consideration within the proposed Emergency Response Program
Hazard	The City's 2019 Hazard Identification and Risk Assessment identifies hazards that could impact the ability of the City to deliver fire protection services.	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Economic	The City has identified top employers that contribute to the economic vitality of the community. If a fire were to occur at one of these facilities it could have a negative impact on the financial well-being of the City.	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Over the five-year period from January 1, 2015 to December 31, 2019, the City averaged 71 structure fires per year.	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Over the five-year period from January 1, 2015 to December 31, 2019 structure fires occurring in Group F – Industrial occupancies account for 8.22% of total structure fires within the City and 36.19% of total structure fire loss.	Mitigate	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Of the fires occurring within the City over the five-year period from January 1, 2015 to December 31, 2019, 24.93% of fires had a reported ignition source of cooking equipment, which is 7.64% higher than the Province (17.29%).	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Of the fires occurring within the City over the five-year period from January 1, 2015 to December 31, 2019, 19.83% of fires had a reported ignition source of open flame tools/smoking articles, which is 5.87% higher than the Province (13.96%).	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Of the fires occurring within the City over the five-year period from January 1, 2015 to December 31, 2019, 13.60% of fires had a reported ignition source of miscellaneous, which is 3.70% higher than the Province (9.90%).	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Over the five-year period from January 1, 2015 to December 31, 2019, of the fire loss incidents in Group C – Residential occupancies, 16.14% of incidents did not have a smoke alarm present (compared to 17.28% in the Province).	Mitigate Accept	Yes	Yes	Yes	Yes	Yes

Profile	Key Findings	Risk Treatment Option: Avoid Mitigate Accept Transfer	Education For consideration within the proposed Public Education Program	Enforcement For consideration within the proposed Inspection and Enforcement Program	Engineering For consideration within the proposed Inspection and Enforcement Program	Economic Incentive For consideration within the proposed Inspection and Enforcement Program	Emergency Response For consideration within the proposed Emergency Response Program
Past Loss and Event History	Over the five-year period from January 1, 2015 to December 31, 2019, of the fire loss incidents in Group C – Residential occupancies, 54.72% of incidents had a smoke alarm present and operating compared to 45.20% in the Province.	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	Over the period from January 1, 2016 to December 31, 2019 the volume of emergency calls responded to by the Burlington Fire Department modestly increased by 1.56% with a slight decrease in 2020.	Mitigate Accept	Yes	Yes	Yes	No	Yes
Past Loss and Event History	For the period from January 1, 2015 to December 31, 2019 the highest percentage of emergency call volume responded to by Burlington Fire Department as defined by the OFMEM response types were medical/resuscitator calls representing 55.3% of total emergency call volume.	Accept	No	No	No	No	Yes
Past Loss and Event History	For the period from January 1, 2015 to December 31, 2019 the second highest percentage of emergency call volume responded to by Burlington Fire Department as defined by the OFMEM response types were false fire calls representing 13.0% of total emergency call volume.	Mitigate Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	There are multiple areas with a high concentration of all emergency call types in the downtown core, and along Lakeshore Road south of Fire Station 1.	Accept	Yes	Yes	Yes	Yes	Yes
Past Loss and Event History	For the period from January 1, 2016 to December 31, 2020 there is a higher concentration of medical/resuscitator, false fire and fire/explosion incidents in areas including near Fire Station 3 on Plains Road West and Plains Road East at King Road; south of Station 1 in the Downtown, including Lakeshore Road and along Brant Street; near Station 8 at Upper Middle Road and Appleby Line; and south of Station 4 on Lakeshore Road.	Accept	No	No	No	No	Yes

5.0

Administration Division

Under the leadership of the Fire Chief, the Administration Division is directly responsible for overseeing the delivery of the City's municipal fire service and strategic management of the fire department. The primary functions of this division includes developing and overseeing the financial operating and capital budgeting requirements, managing labour relations including the collective agreement with the Burlington Professional Fire Fighters Association (BPFFA) (Local 1552), monitoring department performance, reporting to the public and Council, ensuring compliance with all legislated municipal requirements, mitigating known risks and adopting continuous improvement initiatives to support a fire service that continues to meet the needs of the community it serves.

The 2020 fire department organizational review placed significant emphasis on the roles and responsibilities of this division with the objective of responding to the current and future strategic leadership needs of the department.

Section 5.3 of this FMP describes the roles and responsibilities of the Administration Division.

5.1

Burlington Fire Department

The Burlington Fire Department (BFD) has evolved from its historical roots as a volunteer fire department with a single horse drawn fire wagon in the 1890's into a modern composite fire department that includes the utilization of both full-time staff and volunteer firefighters. The department provides a wide range of services, as authorized by Council through the Establishing and Regulating By-law (90-2012). The department's services include emergency response (including firefighting, technical rescues, medical assistance, mutual/automatic aid and hazardous material responses), maintenance, fire prevention and education.

As authorized by By-law 90-2012, the department is organized by divisions that currently include administration, suppression, training, prevention and education, maintenance and communications. The department has a total complement of 205 full-time equivalent (FTE) staff; including six full-time non-union positions, 199 full time unionized staff represented by the BPFFA. There are also six part-time communicators and 65 volunteer firefighters.

The BFD currently provides fire protection and prevention services (as part of a community based prevention model) from eight fire stations strategically located throughout the City. Emergency response services located within the urban area (generally south of 407 E.T.R. and Highway 5 (Dundas Street) of the City are provided from seven fire stations staffed by full-time firefighters with as needed support provided by a complement of volunteer firefighters assigned to Station 1 (Headquarters). Within the defined rural area (generally north of 407 E.T.R. and Highway 5 (Dundas Street) emergency response services are provided by volunteer firefighters assigned to Station 5 located in Kilbride. Full-time fire suppression resources from the urban area also simultaneously respond into the rural area of the City. **Figure 3** illustrates the locations of the City's eight existing fire stations and **Table 6** illustrates the distribution of all full-time staff, volunteer firefighters, and part-time staff by division.

The organizational structure of the BFD provides a framework for enhanced accountability, support for the strategic priorities of this FMP and CRA, and supports the objective of continuous improvement. As the municipality continues to grow, so will the management needs of the BFD. The Fire Chief should monitor the staffing needs of the department and report any recommended changes to council as part of strategies to enhance staffing to support the service as a whole.

Figure 3: Existing City of Burlington Fire Station Locations

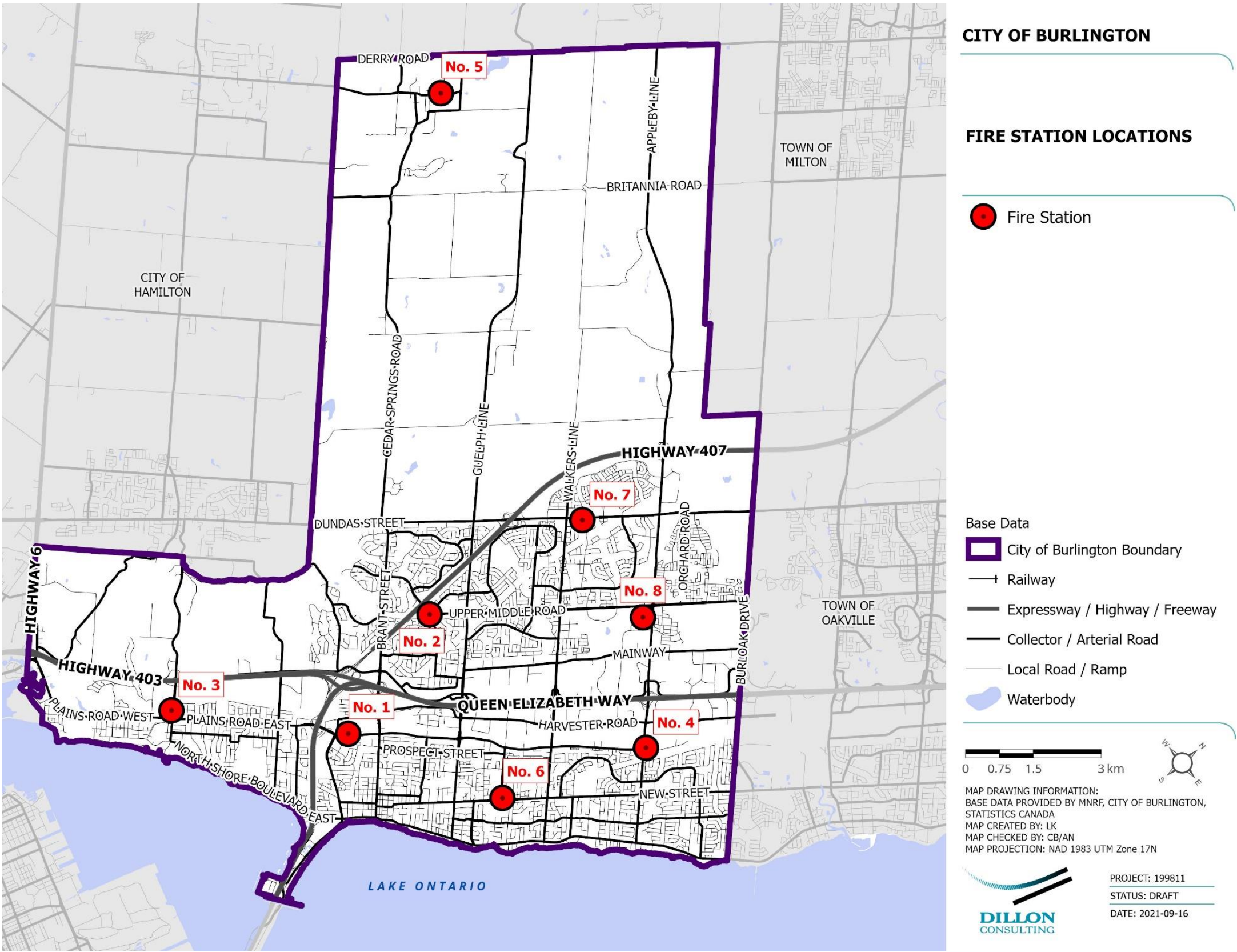


Table 6: Divisional Staff Assignments

Division	Role	# of Full-time Staff Resources	# of Volunteer Staff Resources	# of Part-time Staff Resources	Union Position (Yes/No)
Administration	Fire Chief	1	0	0	No
Administration	Deputy Fire Chief	2	0	0	No
Administration	Manager of Fire Business Services and Strategic Planning	1	0	0	No
Administration	Administrative Assistant	1	0	0	No
Administration	Community Emergency Management Coordinator	1	0	0	No
Administration	Fire Division Associate	2	0	0	Yes
Operations	Platoon Chief	4	0	0	Yes
Operations	Captains	40	0	0	Yes
Operations	Firefighters	128	0	0	Yes
Operations	Volunteer Firefighters (St.1)	0	35	0	No
Operations	Volunteer Firefighters (St.5)	0	30	0	No
Training	Training Supervisor	1	0	0	Yes
Training	Training Officer	2	0	0	Yes
Fire Prevention	Chief Fire Prevention Officer	1	0	0	Yes
Fire Prevention	Fire Prevention Officer	1	0	0	Yes
Fire Prevention	Fire Prevention Inspector	5	0	0	Yes
Fire Prevention	Public Education Officer	1	0	0	Yes

Division	Role	# of Full-time Staff Resources	# of Volunteer Staff Resources	# of Part-time Staff Resources	Union Position (Yes/No)
Maintenance	Mechanic Supervisor	1	0	0	Yes
Maintenance	Mechanic	2	0	0	Yes
Communications	Public Safety Communications Supervisor	1	0	0	Yes
Communications	Public Safety Telecommunicator	10	0	6	Yes
Total	All Roles	205	65	6	Varies

5.2 Succession Planning

Succession planning has traditionally not been an area of much consideration within the fire service in Ontario. Fire departments and municipalities are recognizing the importance and value of succession planning. An effective succession plan requires the implementation of strategies to ensure that opportunities, encouragement and additional training are available for all staff that may be considering further advancement within an organization. A comprehensive succession plan also supports the concepts of coaching and mentoring in support of staff considering future career opportunities. In addition, a proactive succession plan helps assure senior municipal staff and elected officials that there are trained and skilled candidates available in the event vacancies occur within the department.

5.3 Administration Division Staff

Our research indicates that the BFD has invested in developing strategies to inform career paths within the department. In 2012, the BFD developed the 'Burlington Fire Department Career Paths' to assist personnel in career development and succession planning. This guide included information to inform career paths for all divisions up to and including senior positions such as Platoon Chiefs and the Chief Fire Prevention Officer. In 2019, the department updated the Career Path document for the Fire Prevention and Education Division, to align with all division roles and responsibilities and expanded to include references to NFPA informing career development. In our

view, the career path guide supports municipal best practices that provides valuable insight into the types of skills and competencies required for the various positions within the department. Based on our experience, the introduction of competencies as referenced in these reports is applicable to all divisions within the BFD, including administration, which is currently not listed.

It is recommended that the existing career path guide be reviewed and updated using current best practices; to include all divisions within the BFD and the required skills, knowledge, and education; and with reference to NFPA standards, where applicable.

The following sections provide an overview of the roles and responsibilities of staff assigned to the administration division.

5.3.1 Fire Chief

The FPPA states that “If a fire department is established for the whole or a part of a municipality or for more than one municipality, the council of the municipality or the councils of the municipalities, as the case may be, shall appoint a Fire Chief for the fire department”¹⁰.

The FPPA further states that “A Fire Chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services”¹¹. The current Fire Chief was appointed by Council through By-law 103-2020 dated December 14th, 2020.

The analyses presented within this FMP identifies that the Province of Ontario has adopted the National Fire Protection Association (NFPA) Professional Qualifications (NFPA Pro-Qual) Standards. Our research indicates that a Fire Chief in a jurisdiction, such as the City of Burlington, should possess NFPA 1021 Standard for Fire Officer Professional Qualifications – Fire Officer III, or preferably the Fire Officer IV, based on

¹⁰ Fire Protection and Prevention Act, 1997, Part II Responsibility for Fire Protection Services, Section 6. (1) Fire chief, municipalities

¹¹ Fire Protection and Prevention Act, Part II Responsibility for Fire Protection Services, Section 6. (3) Responsibility to council

knowledge, training and/or experience and/or post-secondary education relating to business/public administration.

5.3.2 Deputy Fire Chief of Operations

Reporting directly to the Fire Chief, the Deputy Fire Chief of Operations is responsible for overseeing fire suppression, volunteer and training divisions. At times, this position will be required to assume the role and statutory responsibilities of the Fire Chief/Chief Fire Official, in their absence.

This position is included in the department's on-call 24/7 rotation and is required to respond to and take command of emergency incidents, when required.

Research indicates that the Deputy Fire Chief of Operations, for a jurisdiction such as the City of Burlington, should possess NFPA 1021 Standard for Fire Officer Professional Qualifications – Fire Officer III, practical firefighting experience, suppression training experience and/or post-secondary education relating to business/public administration.

5.3.3 Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure

Reporting directly to the Fire Chief, the Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure is responsible for overseeing the communications and maintenance divisions. The Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure is responsible for fire dispatch communication and technologies, fire facilities, fire apparatus and equipment, specifications and preventative maintenance. At times this role may be required to assume the role and statutory responsibilities of the Fire Chief/Chief Fire Official in their absence.

This position is included in the department's on-call 24/7 rotation and is required to respond to and take command of emergency incidents, when required.

Research indicates that the Deputy Fire Chief of Communications, Mechanical and Critical Infrastructure should possess the NFPA 1021: Standard for Fire Officer Professional Qualifications – Fire Officer III and/or NFPA 1061: Standard for Public Safety Telecommunications Personnel Professional Qualifications and/or NFPA 1071: Standard for Emergency Vehicle Technician Professional Qualifications and/or post-secondary education relating to business/public administration.

It is recommended that a by-law appointing the Deputy Fire Chief of Operations and the Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure be brought forward to Council for approval. This will ensure that the applicable legislative responsibilities of the Fire Chief are delegated when required.

5.3.4 Business Services and Strategic Planning

Fire Prevention and Public Education reported to the Manager of Fire Business Services and Strategic Planning from May 2019 through to December 2021. For the interim, the division reports to the Fire Chief. Business Services and Strategic Planning is responsible for directing overall business and strategic functions for the fire department, including developing and maintaining department-wide frameworks and processes related to business services, best practices and long-term planning.

This position provides internal consulting to the department to assist in developing processes and systems that improve financial operations and coordinates the department's contracts, as well as overseeing procurement processes. This position represents the department in managing partnership agreements with other municipalities, including the development of future partnerships.

This position has responsibilities that impact all divisions within the department, providing short-term and long-term planning, guidance on strategic directions and initiative. This position is also responsible to lead multi-disciplinary teams for process reviews, feasibility studies, best practices, operational procedures and by-law reviews/updates. Therefore, the Manager of Fire Business Services and Strategic Planning is integral to the efficiency and effectiveness of the BFD Senior Management Team.

Research indicates that this position must have a strong working knowledge of Ontario fire service legislation, regulations and best practices. This role has a department-wide responsibility and must have a comprehensive knowledge of all divisions under a fire service. Furthermore, this position should have experience and/or post-secondary university degree/diploma education relating in to business/public administration, commerce/economics and systems/technology are to be considered requirements for this position.

5.3.5 Administrative Assistant

Reporting directly to the Fire Chief, the Administrative Assistant provides a wide range of administrative services supporting the BFD management team; including assisting in project management with administration and support, meeting arrangements and minutes, coordination of reports for Committee and Council and department-wide correspondence. This role often works with confidential and sensitive matters regarding staffing and labour management.

This role maintains department's central filing system (both manual and computerized), including personnel files. Keeps records and files specific for the management team, some of which are of a highly confidential in nature.

This position also coordinates accounts payable and purchasing functions for the department; including preparation of journal entries, reconciling advanced funds and petty cash, invoicing and preparation of financial reports and purchasing cards, and processing bank deposits.

The Administrative Assistant is a core member of the department management team and works to support and develop improved procedures for the management team and department.

This role should have strong working knowledge of department and corporate administrative functions, computer programs, office management, along with business and accounting skills. A minimum of three years of experience in office environment, including organizational, communication and public relation skills is recommended.

5.3.6 Fire Management Team

The current organizational structure provides an effective and efficient management team for the BFD. However, it is at its practical limit in terms of what can be accomplished. During the FMP process, it became evident that the management roles are at their practical capacity. There has not been an increase in management roles within the BFD for over 20 years. It was also noted that the management team experienced a reduction in one role in late 2013 during the last organizational change with the work from that position being assigned under the Manager role.

A well-functioning and properly staff fire management team aligns with the focus areas of the '2018-2022 Burlington's Plan: From Vision to Focus' including:

- Increasing Economic Prosperity and Community Responsive Growth Management
- Improving Integrated City Mobility
- Supporting Sustainable Infrastructure and a Resilient Environment
- Building More Citizen Engagement, Community Health and Culture
- Delivering Customer Centric Services with a Focus on Efficiency and Technology Transformation

Supporting the recommendations in the FMP, as approved by council, lays out the requirements to support the projected community growth in Burlington. Additional resources will likely be necessary within the administrative division to lead and support the work necessary to implement the recommendations of this FMP.

It is recommended that the Fire Chief monitor the staffing needs of the department and report any recommended changes to council as part of strategies to enhance staffing to support the fire service as a whole.

The changes discussed and recommended as part of this FMP will have an impact on the workload of every division in the BFD. This will be highlighted in the relevant sections of the FMP. An assessment needs to be undertaken of each division's current and future workload to ensure there are sufficient resources to deliver the services defined in the Establishing and Regulating By-law and as it may be revised in future. This is best carried out in a coordinated manner led by the BFD senior management.

It is recommended that a workload demand analysis be conducted for all divisions of the BFD to understand the current and future workload required to effectively and efficiently meet the needs of the department's service delivery and community risk reduction strategies.

5.4

BFD Mission Statement, Vision Statement and Core Values

PFSG 03-02-13 "Master Planning Process for Fire Protection" identifies the importance of a mission statement for a fire department. A mission statement should be easily remembered, have meaning and clearly communicate the primary goal(s) of the

department. Effective mission statements identify what a fire department does, who it does it for, and why it does it.

Mission statements are intended to be short, clear and powerful in defining a purpose and primary objectives.

The current mission statement of BFD is:

“The Burlington Fire Department is a team of highly trained and caring professionals who provide vital emergency response, prevention and education services that increase community safety and quality of life.”

In addition, the BFD has an existing vision statement. A vision statement should outline long-term goals, where applicable.

The current vision statement of BFD:

“The Burlington Fire Department will be the leader in our profession in service excellence, advanced training, employee development, use of technology and ongoing department evaluation to ensure community safety and quality of life.”

In addition to the mission and vision statements, the BFD upholds the values of Public Safety, Firefighter Safety, and Customer Service.

While the mission and vision statements have been in place for many years, they are seldom referred to on a regular basis, and they are difficult to recall and recite by fire personnel and the community. The core values have been adopted within the fire service and are used to recognize individuals and staff who go above and beyond in representing the community, city and department. In addition, these values are inscribed on a numbered customized BFD coin that is presented to an individual(s) when they are recognized for their contributions to supporting these values.

It is recommended that the Burlington Fire Department consider a review and update the existing Mission and Vision statements so that they are meaningful to fire personnel and represents the services provided to the community. That Fire Chief will report back to council for information and reference.

5.5 Municipal By-laws

The Municipal Act and the Fire Prevention and Protection Act authorize council of a municipality to enact by-laws to operate a municipality, including the fire department.

In addition to meeting this legislative responsibility, by-laws provide the community with important information regarding the level of service that a municipality intends to provide. By-laws also provide municipal staff with the authorization to provide these services, as well as the responsibility to achieve the prescribed service level. By-laws common to a municipal fire service include the establishing and regulating by-law, appointment by-laws, and fees for service by-laws.

5.5.1 Fire Department Establishing and Regulating By-law 090-2012

The Municipal Act and the Fire Protection and Prevention Act permit council of a municipality to enact a by-law to establish and regulate a fire department. An Establishing and Regulating (E&R) by-law for a fire department should provide clear and accurate policy direction reflecting how a municipal council intends fire protection services to function and operate. PFSG 01-03-12 “Sample Establishing and Regulating By-law” prepared by the OFMEM provides a description of the primary issues to be addressed, as well as a template for developing an E&R By-law.

The primary areas identified by the OFMEM to be included in an Establishing and Regulating By-law are:

- General functions and services to be provided
- The goals and objectives of the department
- General responsibilities of department members
- Method of appointment to the department
- Method of regulating the conduct of members
- Procedures for termination from the department
- Authority to proceed beyond established response areas
- Authority to effect necessary department operations

The City of Burlington’s Fire Department By-law 090-2012 establishes and regulates the Burlington Fire Department which includes an overview of the approved services

provided by the BFD in the Appendix of the by-law 090-2012. It is noted that the by-law currently does not reference the core service of the Training Division, communications.

In our view, the current by-law references most of the areas identified by PFSG01-03-12. In response to the analysis presented within this FMP, there are several areas where the City should consider further amendments. For example, the analysis within this FMP includes recommendations for Council's consideration in adopting more defined service levels in several areas such as fire inspection and public education programs. Subject to Council's consideration and approval, these defined service levels should be included within an updated establishing and regulating by-law.

It is recommended that the Establishing and Regulating By-law be reviewed and updated, including adding all of the service areas provided by the BFD, for council approval.

5.5.2 Mutual Aid Fire Plan By-law 001-2014

By-law 001-2014 provides for the participation of the Burlington Fire Department in the Halton Region Mutual Aid Plan. The by-law authorizes the BFD to leave the municipal boundary at the discretion of the Fire Chief or designate to respond to calls for assistance from other municipal fire departments.

5.5.3 Open Air Burning By-Law 65-2019

By-law 65-2019 details the requirements for setting open-air fires and the times when open-air fires may be set. Residents of Burlington are required to obtain a permit prior to starting an open-air fire. The Chief Fire Official has the authority to issue or refuse a burning permit if the conditions set out in the by-law are met, as well as cancel or suspend the permit at any given time.

The by-law indicates that no burning permit shall be issued for an open-air burning within the urban area of the City. Permitted areas are illustrated on the City of Burlington map "Open Air Burning Areas" found in **Figure 4**.

Residents of Burlington can apply for an open-air burn permit through the fire department website. Additional information about open air burning and interpretation of open-air burning can be found on the BFD website.

Figure 4: City of Burlington Open Air Burning Areas (By-law 65-2019)

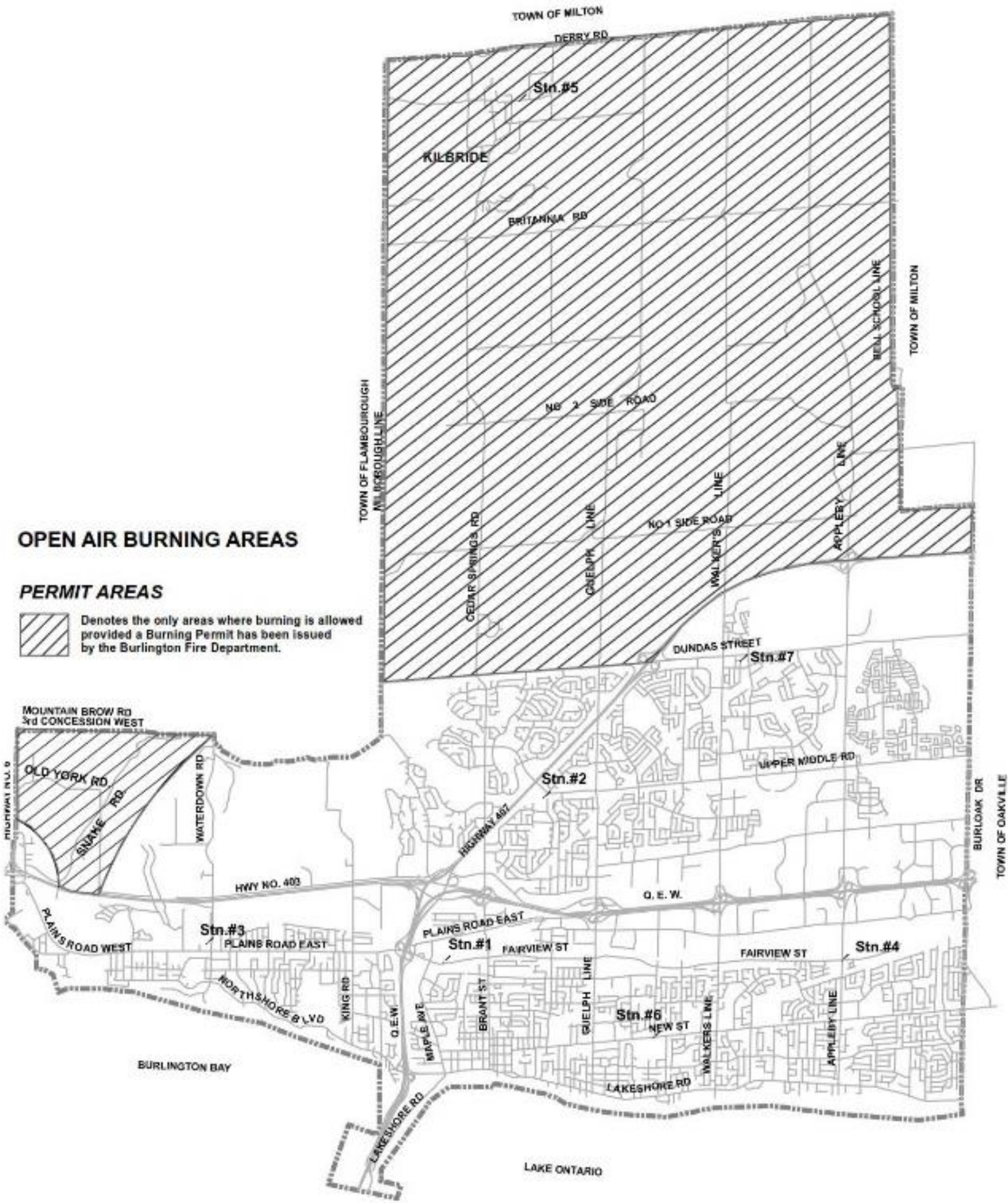


Figure Source: City of Burlington By-law 065-2019

5.5.4 Rates and Fees By-law 92-2020

By-law 92-2020, as amended, enables the City to recover costs for the provision of various departmental services. The by-law considers fees and rates within the following categories:

- Administration
- Fire prevention inspections
- License/compliance inspections,
- Propane – license application reviews
- Permits
- Violations
- False alarm response
- Emergency responses
- Technical responses
- Non-emergency responses

The City's rates and fees are updated annually and provided in a staff report for Councils' consideration and approval as part of the annual corporate budget process.

By-law 092-2020 also authorizes fees and charges for the following inspection types:

- Non-compliance re-inspection and subsequent inspections
- Fire inspection 1 to 6 storeys
- Fire inspection 7 to 15 storeys
- Fire inspection 16+ storeys
- Occupant load determination/re-calculation
- Fire prevention special event inspections
- Liquor licence inspection
- Cannabis retail inspection
- Private day care
- Licenced day care, foster care and group homes

The fees charged by the BFD for fire safety inspections represent a cost recovery/user fee approach that has become common in the industry.

5.5.5 Fireworks and Firecrackers By-law 084-2020

By-law 084-2020 regulates the sale, and discharge of fireworks within the City of Burlington. The by-law differentiates between low-hazard and high-hazard fireworks and does not allow the sale of high-hazard fireworks and prohibits the sale of low-hazard fireworks except for certain days such as Victoria Day or Canada Day. The by-law requires that a permit be obtained prior to discharging high-hazard fireworks. Individuals who do not follow the provisions of this by-law could be subject to a fine of up to \$5,000 for a first offence and up to \$10,000 for a second offence.

5.6 Agreements

Within the fire service, there are multiple approaches to sharing services or procuring services, including mutual aid, automatic aid, and fire protection agreements. The agreements to which the BFD is a party are outlined in the sections that follow.

5.6.1 Mutual Aid Agreements

The FPPA provides for the establishment of mutual aid agreements (and automatic aid agreements) between municipalities¹². The BFD is an active participant in the Halton Region Mutual Aid Fire Plan, as authorized by By-Law 001-2014.

Mutual aid agreements are predetermined plans that allow a participating fire department to request assistance from a neighbouring fire department. PFSG 04-05-12 Mutual Aid, provided by the OFMEM identifies the information required to develop and approve these agreements.

There are two main scenarios when mutual aid agreements are activated:

- A fire department may ask for mutual aid assistance when it is at the scene or has information that immediate assistance is required
- Fire departments may immediately request a simultaneous response from a participating fire department where distance and/or conditions dictate

Mutual Aid Plans and the Regional Fire Coordinators also provide the point of access for municipalities to request assistance from the Provincial Emergency Operations Centre in

¹² Fire Protection and Prevention Act, Section 1.1.1.1(5), Sections 1.1.1.2 (6)

instances such as responding to hazardous materials incidents including chemical, radiological or nuclear incidents.

Assistance under a mutual aid agreement is reciprocal and there are no fees involved for response. Mutual aid agreements are not intended to be used for day-to-day response, but rather for extraordinary emergencies which exhaust or exceed the response capabilities of a fire department.

The Halton Region Mutual Aid Fire Plan includes the four regional municipalities: City of Burlington, Town of Halton Hills, Town of Milton, and Town of Oakville. The fire chiefs' share the role of regional fire coordinator by rotating the responsibility annually.

5.6.2 Automatic Aid Agreements

The FPPA provides for the establishment of automatic aid agreements between municipalities. In contrast to mutual aid agreements, automatic aid agreements are programs designed to provide and/or receive assistance from the closest available resource, regardless of municipal boundaries, on a day-to-day basis. PFSG 04-04-12 Automatic Aid describes the concept of these types of agreements.

The advantage of implementing an automatic aid program is that the person/persons experiencing the emergency receive fire services from the closest available provider (municipality) by supplying seamless integrated fire suppression services through the elimination of traditional municipal service boundaries. Automatic aid agreements provide benefits such as:

- An enhancement of the level of public safety
- A reduction of the critical element of time between the commencement of a fire and the application of an extinguishing agent to the fire by dispatching the closest available fire suppression resources
- The reduction of life, property and environmental losses
- The improvement of public and fire-fighter safety

Automatic Aid Agreements are typically created between two neighbouring communities to reduce initial response times by deploying firefighters from the closest fire station, regardless of municipal boundaries; to deploy additional firefighters to enhance the depth of response capabilities of the requesting fire department; or

alternatively, to request a specific type of apparatus such as a tanker or an aerial apparatus to support the response of the requesting fire department.

5.6.2.1 Milton Automatic Aid Agreement

The Town of Milton and City of Burlington are parties to an automatic aid agreement, dated July 2003. The agreement provides for reciprocal emergency response services to the following areas for all call types:

- Rural area, north-east area of Burlington adjacent to the Burlington-Milton border
- Rural area, North-West area of Burlington, North of Kilbride

This is a reciprocal agreement with no costs associated for the provision of an automatic aid response.

5.6.2.2 Hamilton Mutual and Automatic Aid Agreement

The City of Hamilton and City of Burlington are parties to a mutual and automatic aid agreement, dated April 2003. The agreement provides for reciprocal emergency response services to areas such as:

- Aldershot
- Highway #6
- Highway 403
- Carlisle

This is a reciprocal agreement with no costs associated for the provision of an automatic aid response.

5.6.3 Halton Region Tiered Response Agreement

The background of tiered response agreements relates back to the development of the provincial wide 9-1-1 system. This Agreement is between Halton Regional Emergency Paramedic Service (previously Medical Services), Halton Regional Police Service and the four Municipal Fire Services (Burlington, Oakville, Milton and Halton Hills) within the Region of Halton, which authorizes the activation of tiered response to specific conditions and types of calls identified within this Agreement. For the purpose of this Agreement a tiered response is defined as “the immediate response of more than one

agency for emergency incidents.” The specific conditions (incidents) requiring a tiered response are outlined in Appendix A of this Agreement.

As part of this Agreement the public safety answering points (PSAPs) (commonly referenced as dispatch centres) for Municipal Fire Services within the Region of Halton, Halton Regional Police Services and the Mississauga Central Ambulance Communications Centre (CACC) notify the appropriate agency based on defined criteria. Any agency in receipt of a request for service meeting the tiered response criteria will notify the appropriate agency on the 90th percentile notification time targets or no later than 60 seconds from when the call is committed based upon the identified criteria outlined.

In summary, the BFD responds to the following tiered response incidents; calls where multiple casualties are reported and specific medical calls for assistance, such as choking, unconscious, respiratory arrest/distress, cardiac arrest and chest pains, motor vehicle collisions reporting injury or entrapment.

These calls for assistance (medical calls) represent approximately 57% of total emergency call volume for the BFD from the period of January 1st, 2015 to December 31st, 2019 [Office of the Fire Marshal].

It is recommended that the existing tiered response agreement be reviewed with emergency agency partners and updated in consideration of pending CACC protocol changes, advancements in technology, review of the Establishing and Regulating Bylaw and community needs. That the Fire Chief report back to council, as required.

5.6.4 Other Agreements

5.6.4.1 Trench Rescue Agreement – City of Burlington and City of Mississauga

The trench rescue agreement between the City of Burlington and the City of Mississauga in 2017 allows the Burlington Fire Department to request specialized trench rescue services from the Mississauga Fire and Emergency Services at a trench rescue incident. For this service, Burlington shall pay Mississauga a fee of \$1,861.68 per hour based on the fee change outlined in a May 2019 letter. The 2017 agreement is subject to termination should either party wish to leave the agreement and upon giving the other party 120 days’ notice.

5.6.4.2 Triparty Dispatch Agreement

As per a tri-party dispatch agreement dated November 2018, the City of Burlington provides 9-1-1 emergency incident call taking and fire dispatching services to the Town of Oakville and the Town of Halton Hills. This agreement is discussed in greater detail in **Section 11.0 – Communications Division**.

5.6.4.3 Medical Director Agreement

Dated September 2018, this agreement outlines medical direction oversight by a qualified and practicing medical professional to provide the Burlington Fire Department with the provision of training and responding to emergency medical calls for assistance, as part of the Tiered Medical Response Agreement, outlined in **Section 5.5.3**.

5.6.4.4 MTO A.R.I.S. Agreement

The Authorized Requester Information System (ARIS) agreement with the Ministry of Transportation (MTO) allows the BFD to use the ARIS website (MTO hosted) to access vehicle plate numbers and insurance provider information for cost recovery purposes, as outlined under Section 446 of the Municipal Act for recovery of costs for services provided by the municipality.

5.6.5 Agreements Summary

The City of Burlington has established partnering agreements that have historically and continue to serve the City of Burlington well. Considering the legacy of these agreements and potential operational changes within BFD and within the municipalities with whom the City of Burlington has agreements with, these agreements should be reviewed and revised to ensure they accurately reflect the existing and planned services to be provided and/or received by the City. The City has begun the process of liaising with its neighbouring municipalities (specifically Milton and Hamilton) to initiate the review of the agreements highlighted above.

Recognizing the amount of effort required to review and negotiate the agreements, it would be prudent to develop a plan to conduct comprehensive reviews over a reasonable period and consider formalizing and implementing a review cycle of three to five years.

It is recommended that a review of all existing partnering agreements be undertaken on a regularly scheduled basis cognizant of the CRA and consistent with any changes to the Establishing and Regulating By-law. That the Fire Chief to report back to council, as required.

5.7 Operational Guidelines and Policies

Current industry best practices reflect the use of Standard Operating Policy (SOP) documents as a tool to communicate broad, but more rigid direction to staff related to how specific tasks are to be completed to safely and effectively deliver fire protection services. Alternatively, Standard Operating Guidelines (SOG) are used to communicate guidance to staff on how specific tasks should be completed to safely and effectively deliver fire protection services. The BFD utilizes SOG to allow staff the ability to adjust their actions specific to the many variables that may be present at a response scene, including geography and local variation, available resources, building construction and type are some examples.

In comparison, department 'policies' are intended to provide minimal room for interpretation or application whereas 'operating guidelines' recognize that there can be a need for interpretation or variance as a result of the conditions that may present.

PFSG 04-69-13 Co-ordination, Development, Approval, and Distribution of Standard Operating Guidelines for Various Disciplines, describes the intent of operating guidelines that can be summarized as to:

- Enhance safety
- Increase individual and team effectiveness
- Improve training efficiency
- Improve orientation for entry-level staff
- Improve risk management practices
- Prevent/ avoid litigation
- Create objective post-incident evaluations
- Permit flexibility in decision making

The BFD differentiates between operating policies and operating guidelines. The BFD operating guidelines are divided into the following categories:

- Personal Safety
- Training
- Apparatus and Equipment
- Emergency Response
- Incident Command system
- Fire Ground Procedures

- Pre and Post Incident Procedures
- Communications and Dispatch
- Administration
- Water Supply
- Fire Prevention

Our review of the department's current operating policies and operating guidelines indicates that the BFD has developed a comprehensive list of department SOP and SOG that reflect the content of what would be expected within a department such as the BFD.

Our review has also identified that many of the current SOP and SOG have not been reviewed or updated in the past five years. As a result, many of the current ones refer to outdated information. In our experience, this is not uncommon within the fire service due to other workload priorities and the speed at which revisions to legislation, regulations and practices are evolving within the fire service. Consultation with the BFD identified that the related templates have recently been altered to include a review cycle, and that the new records management system solution recently adopted will better support SOP and SOG review in the future. The BFD should continue to prioritize the regular review of its existing Standard Operating Policies and Guidelines in order to update them, consolidate overlapping ones, and develop new ones, where and if required.

5.8

Proposed Community Risk Reduction Plan (CRRP)

As referenced throughout this FMP, Community Risk Reduction Plans (CRRP) focus on a holistic approach to mitigating or preventing risk within a jurisdiction, utilizing the five E's namely: education, enforcement, engineering, economic incentive and emergency response. It also involves strategies that ensure the right resources are being used be it a targeted public education campaign for seniors or dispatching appropriate personnel and equipment to a medical call. This approach enables municipalities to provide fire protection services in an efficient and effective manner. Based on our research and observations of BFD, there would be value in developing a CRRP for the City.

A CRRP would build on the successes the BFD and the City have already achieved, including:

- Existing partnerships with local agencies and organizations
- Existing smoke and carbon monoxide alarm programming

- Community-based fire prevention model
- COVID-19 friendly approaches to fire prevention and public education

The targeted stakeholder interviews revealed a baseline of positive existing relationships between BFD and stakeholders. There was also a strong willingness from stakeholders to work more proactively with the BFD to identify, design, and implement enhanced community risk reduction strategies. In developing a proposed CRRP, stakeholder input and buy-in will be an important part of the process to design and implement the plan. Consultation with the BFD identified that this initiative began prior to the COVID-19 pandemic and was halted as a result. It is recommended that the BFD continue this initiative to develop and implement a Community Risk Reduction Plan in partnership with stakeholders.

5.9 Annual Reports

The OFMEM’s “Optimizing Public Fire Safety” model recognizes the importance of ongoing monitoring, evaluation, and revisions to the fire protection services approved by Council. Fire services across the province have utilized annual reports to Council as a tool to provide a high degree of accountability and transparency on behalf of the Fire Chief in reporting to the community and Council on the level of fire protection services provided. This regular reporting process is also an ideal opportunity to report on key performance benchmarks, as well as update the Community Risk Assessment and fire related by-laws. The process can also provide further value in identifying changes or trends within the community.

Our research into preparing this FMP indicates that the Burlington Fire Department has transitioned away from annual reports and instead completes business plans in alignment with the City of Burlington’s service reporting process, which are updated and reviewed annually and have been in effect since 2016. Each business plan is included with the budget package and accompanied by an informational presentation to Council.

The Business plan for fire department is located on the City’s website under Public Safety Services.

The business plan includes overall service and sub-service descriptions, their alignment with the City’s Vision to Focus Plan, the services’ goals, a current state analysis, performance measurements, and emerging opportunities. The plan also includes a

description of anticipated risks that reflect evolving trends within the fire industry and community.

Industry best practices support the continuation of this initiative as well as including the additional performance measures included within this FMP and Community Risk Assessment reflecting an effective strategy for the department in monitoring ongoing performance and continuous improvement efforts. This includes identifying and reporting on fire industry evolving trends that may require identifying a change in services or programs provided by the BFD.

5.10 Post-Traumatic Stress Disorder Prevention Plan

First responders, including firefighters and communicators, are at an increased risk of Post-Traumatic Stress Disorder (PTSD) due to the nature of their work. The Supporting Ontario's First Responders Act requires fire departments to establish a Post-Traumatic Stress Disorder Prevention Plan (PTSD) and provide the Ministry of Labour with information regarding the Plan. Under the Supporting Ontario's First Responders Act, there is a presumption that a diagnosis of PTSD for certain workers is work related. Details relating to the Plan are to be shared within the workplace in an effort to prevent PTSD.

The BFD submitted a letter dated April 10, 2017 to the Ministry of Labour outlining the City's prevention, intervention, recovery and return to work focus areas. The letter outlined several PTSD prevention initiatives including a pre-employment testing, Road 2 Mental Readiness training, Employee Family Assistance Plan (EFAP), Chaplain, Independent Medical Examinations, Cognitive Demands Analysis and a peer support program, all aimed at protecting the mental health, wellbeing and psychological safety of the City's first responders.

The BFD is compliant with the Supporting Ontario's First Responders Act. As an area of ongoing research and development, workplace wellness should be considered as an ongoing priority for the Burlington Fire Department. Behavioural health requires funding and employer support to positively impact workplace wellness. The BFD is encouraged to investigate and consider enhancing its current program. This can include investigating other research and standards such as the National Standard of Canada CAN/CSA-Z1003-13 'Psychological Health and Safety in the Workplace'. This is a voluntary standard that

specifies requirements for a documented and systematic approach to develop a psychologically healthy and safe workplace. The key components of compliance with this Standard are a) a workplace stress audit, b) Mental Health training for supervisors, c) a crisis response plan, and d) an internal support system.

5.11 Records Management, Retention and Reporting

An important component of fire department administration is overseeing records management and reporting. Records management plays a role in every division of a department for a variety of reasons including, but not limited to, operations emergency response, firefighter training records, as well as measuring the effectiveness of fire prevention and public education programs.

PFSG 04-60-12 Records Management provides a comprehensive overview of an effective and efficient records management program that includes the appropriate use and protocol by division of the records management systems in place; record retention schedules; standards for record quality; protocols for record security and integrity of hard-copy and electronic records; and outline other applicable codes, standards or industry best practices that apply (e.g., Municipal Act, 2001, Municipal Freedom of Information and Protection of Privacy Act, 1990). The retention practices of the BFD are guided by the City's records and retention by-law, By-law 5-2015, outlining a records retention schedule for all records within the care and control of the City of Burlington.

The research conducted into preparing this MFP indicated that the BFD is currently in the process of replacing its software application for records management. The timeline target to complete the implementation of this application is Q4 2022. This new software offers several modules that supports BFD operations and record management. Currently the department is continuing to decide which module best meet their needs in consideration of other corporate wide application implementations.

The records management system is designed to meet the reporting needs of all fire department divisions and operations including but not limited to asset management, training and certification, occupancy and building risk profiles, and administrative documentation reporting. It is interfaced with the department's computer aided dispatch system and actively records all incidents. The VISION Risk Assessment tool, which BFD also plans to implement with this application, supports the department's

ability to analyze the risks present in the community and compare data to other departments. This tool will also support the annual review of community risk assessment (O.Reg. 378/18) and will achieve several of the 11 recommendations from the past CRA (2016) into operations supporting building and occupancy risk profiles, pre-planning and building risk assessments, data driven and informed risk-based fire safety education initiatives.

The BFD should develop a department policy in supporting the City's Records Retention Schedule (Schedule A of By-law 5-2015 Records Retention) which outlines specific BFD records management practices and retention. Regardless of what records management system or processes are in place, the department would benefit from a policy that clearly outlines processes and accountability for training records.

It is recommended that the BFD develop a records management policy, supporting the City's Records Retention Schedule, outlining internal requirements and accountability for all department records.

5.12 Recruitment and Retention

There are numerous factors impacting volunteer firefighters across the province, including the requirements for increased training standards and increasing emergency call volumes, resulting in increasing personal time commitment. Maintaining an appropriate balance between the demands of being a volunteer firefighter and those of other commitments is becoming more challenging.

Historically, volunteer firefighters represented a portion of the community that lived and worked in close proximity to the fire station and individuals were allowed to leave work and respond to emergency calls. Financial compensation, was not the only motivator for those seeking to become a volunteer firefighter. Performance expectations including maintaining training standards and attendance at training sessions, and sustaining response attendance to emergency calls continue to increase the demands municipalities place on volunteer firefighters.

Municipalities must begin to develop recruitment and retention strategies for volunteer firefighters that recognize this evolution. Retention strategies can include a range of material and monetary rewards, some of which are offered by the BFD. Material rewards include such things as uniforms, awards, and support to attend conferences.

Monetary rewards have evolved to include considering access to benefits such as insurance coverage and access to other benefit programs which full-time employees receive. Considering the total compensation package, the value of the training and experience should be emphasized to those interested in joining the BFD as volunteer firefighters.

The issue of volunteer firefighter remuneration was raised during consultation with the firefighters as part of this FMP process. Volunteer firefighters are paid based on a points system, which enables the City to budget based on fixed remuneration levels for each rank of volunteer (i.e. Firefighter, Lieutenant), and allows volunteers to receive greater remuneration based on call attendance. The points-based remuneration system is becoming less common among fire departments with volunteer firefighters. The BFD volunteer firefighter remuneration was last reviewed by the City in 2000.

It is recommended that the BFD conduct a comprehensive volunteer firefighter review including recruitment and retention strategies.

5.13

Administration Division Summary

Under the leadership of the Fire Chief, the existing BFD management team is comprised of three non-unionized positions; a Deputy Fire Chief of Operations, a Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure and a Manager of Fire Business Services and Strategic Planning. As the City of Burlington continues to grow and expand, this places additional workload on the senior leadership team of the department to sustain historical levels of service, implement the recommendations of this plan and to participate and contribute to any other corporate initiatives that the BFD needs to be involved with.

Due to projected community growth, strategic priorities and anticipated increased workloads of the fire management team, leadership of the Burlington Fire Department is in a state of evolution as it transitions to meet the needs of a growing community. As such, this FMP identified that additional management team resources will likely be required in the future to balance workload and support ongoing effectiveness and efficiency of the management team and department.

Goals, Targets, and Recommendations

GOAL #1: Burlington Fire Department continues to provide the leadership structure, leadership capabilities, and applicable documentation and systems while meeting the needs of a growing and evolving City.

Target #1A: Enhance the existing organizational structure, including additional staff resources within the fire administration team to support community growth and expanding workloads.

Recommended Action: That the Fire Chief monitor the staffing needs of the department and report any recommended changes to council as part of strategies to enhance staffing to support the fire service as a whole. (Section 5.3.6)

Recommended Action: That a workload analysis be conducted for all divisions of the BFD to understand the current and future workload required to effectively and efficiently meet the needs of the department's service delivery and community risk reduction strategies. (Section 5.3.6)

Recommended Action: That the Burlington Fire Department consider a review and update the existing Mission and Vision statements so that they are meaningful to fire personnel and represents the services provided to the community. That Fire Chief will report back to council for information and reference. (Section 5.4)

Recommended Action: That the BFD conduct a comprehensive volunteer firefighter review including recruitment and retention strategies, the volunteer promotional policy and other potential initiatives. (Sections 5.11, 7.12.3, 8.12.2.2, 8.12.3)

Target #1B: Maintain up-to-date documentation and procedures for all by-laws, agreements, Standard Operating Policies (SOP), Standard Operating Guidelines (SOG), and job descriptions.

Recommended Action: That the existing career path guide be reviewed and updated using current best practices; to include all divisions within the

BFD and the required skills, knowledge, and education; and with reference to NFPA standards, where applicable. (Section 5.3)

Recommended Action: That a by-law appointing the Deputy Fire Chief of Operations and the Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure be brought forward to Council for approval. This will ensure that the applicable legislative responsibilities of the Fire Chief are delegated when required. (Section 5.3.2 and 5.3.3)

Recommended Action: That the Establishing and Regulating By-law be reviewed and updated, including adding all of the service areas provided by the BFD, for council approval. (Section 5.5.1)

Recommended Action: That the existing tiered response agreement be reviewed with emergency agency partners and updated in consideration of pending CACC protocol changes, advancements in technology, review of the Establishing and Regulating Bylaw and community needs. That the Fire Chief report back to council, as required. (Section 5.6.3)

Recommended Action: That a review of all existing partnering agreements be undertaken on a regularly scheduled basis cognizant of the CRA and consistent with any changes to the Establishing and Regulating By-law. That the Fire Chief to report back to council, as required. (Section 5.6.5)

Recommended Action: That the BFD develop a records management policy, supporting the City's Records Retention Schedule, outlining internal requirements and accountability for all department records. (Section 5.911)

6.0

Fire Prevention and Public Education Division

The minimum legislative requirements for the delivery of fire services are outlined within the FPPA, which state that a municipality shall “establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention”¹³.

To further assist municipalities in understanding the definition of what the minimal acceptable fire prevention and public education programs are, the OFM developed PFSG 04-40-03 and 04-40-12 Selection of Appropriate Fire Prevention Programs.

As note earlier, although all PFSGs are currently under review by the OFM, they continue to provide valuable insight into identifying the minimal acceptable fire prevention and public education programs including:

- A simplified risk assessment
- A smoke alarm program
- The distribution of fire safety material
- Inspections upon complaint, or when requested to assist with code compliance

In our view, one of the reasons that the OFM is currently conducting a review of all PFSGs is to update them to reflect changes to applicable legislation impacting the delivery of fire prevention and public education programs.

The analysis within this section has been informed by our knowledge of the current applicable legislation, including the new O. Reg. 378/18, applicable NFPA standards, and the PFSGs developed by the OFMEM.

Collectively, this information has been applied within this FMP to define the local “needs and circumstances”, as required by the FPPA, for the delivery of fire prevention and public education programs within the City of Burlington.

Risk analysis empowers a municipality with the opportunity to assess alternative community fire risk mitigation and reduction strategies. Examples of fire risk reduction

¹³ Fire Protection and Prevention Act, 1997 Part II, Section 2. (1) (a)

strategies may include enhancing a fire inspection program within a specific building occupancy classification; developing a public education program for an identified at-risk demographic within the community, such as seniors; or introducing local requirements for residential sprinklers. These types of risk reduction and risk mitigation strategies recognize that there are proactive alternatives to increasing fire suppression capability within a community.

6.1 Fire Prevention and Public Education Industry Best Practices

The fire prevention and public education programming provided by the BFD should be guided by the most current legislative requirements and industry best practices. Primarily, these include the mandatory requirements of the FPPA, NFPA 1730 Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations and the NFPA Fire and Life Safety Ecosystem.

6.1.1 NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations (2019 Edition) (NFPA 1730)

NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations was initially released in 2016, and was recently updated in 2019. This standard establishes criteria through six chapters:

1. Organization
2. Community Risk Assessment
3. Fire Prevention Inspection and Code Enforcement Activities in Existing Occupancies
4. Plan Review
5. Investigations
6. Public Education Programs

The focus of NFPA 1730 is to ensure that a Fire Prevention and Public Education Division has a Community Risk Reduction Plan (CRRP) in place and that it is based on the local “needs and circumstances” established through Community Risk Assessment. A CRRP is then used to establish resources and programs that are designed to mitigate and/or reduce identified fire risk. For example, NFPA 1730 identifies recommended fire

inspection frequency cycle which could be refined based on the local context. The supporting appendices of NFPA 1730 provide exercises to identify staffing resource needs that consider required tasks and time demands.

The analysis and methodology included within this FMP integrates the intent of developing a CRRP as referenced within NFPA 1730. Where applicable, this FMP will present risk reduction and risk mitigation strategies to optimize the use of the ‘first two lines of defence’ in response to the identified ‘key findings’ and ‘identified risks’ included in the CRA to enhance the existing fire prevention and public education programs and services provided by the BFD. The focus of NFPA 1730 is consistent with the current industry trends to further emphasize fire prevention and public education services and programs through the application of the first four “E’s” (education, enforcement, engineering and economic incentive) of community risk reduction and risk mitigation planning.

It is recommended that the current inspection cycles approved by Council be reviewed based on a building/risk profile versus an occupancy/building type, and that the review include a comparison to NFPA 1730 as part of a risk reduction strategy. That the Fire Chief report back to council on any recommended enhancements to the existing council approved inspection cycles to support CRRP.

6.2 Existing Fire Prevention and Public Education Staff Resources

Fire Prevention and Public Education reported to the Manager of Fire Business Services and Strategic Planning from May 2019 through to December 2021. For the interim, the division reports to the Fire Chief. The Chief Fire Prevention Officer (CFPO) is responsible for the daily operations and supervision of all fire prevention and public education division staff. This includes one Fire Prevention Officer (FPO), five Fire Prevention Inspectors (FPI), one Public Education Officer (PEO), and one Fire Divisions Associate (FDA).

Fire inspection staff operate using a community-based model, working from Stations 2, 3, 6, 7 and 8, while the CFPO, FPO, PEO and FDA work out of BFD Headquarters (Station 1). This model enables fire prevention staff to be accessible to the public for questions relating to fire safety and offers the opportunity for inspectors and suppression crews to learn from each other’s experiences.

There is a second FDA that supports the BFD, but here too it appears that they are at a practical capacity of what they can take on. The workload analysis previously identified should include the FDA positions.

6.3 Applicable Training and Qualifications

In 2013, the OFMEM announced that the Ontario fire service would be adopting the NFPA Pro-Qual Standards to replace the previous Ontario Fire Services Standards (OFSS). The previous OFSS had been developed by the Ontario Fire Chiefs Association in partnership with the OFMEM to provide guidance to the training and qualifications of fire department staff.

To assist municipalities in this transition, a 'Grandfathering Policy' was developed by the OFMEM to facilitate the process of implementing the NFPA Pro-Qual Standards. The OFMEM grandfathering policy stated that "in order to exempt anyone from having to start over in any program and in order to give recognition for training and education already completed and for experience already gained".¹⁴ The NFPA Pro-Qual Standards are now recognized as the industry best practices for training and qualifications related to the delivery of public education and fire prevention programs and services within the Province of Ontario.

6.3.1 Applicable NFPA Pro-Qual Standards

The applicable NFPA Pro-Qual Standards as they pertain to roles and responsibilities of fire prevention and public education staff are outlined in **Table 7**. These standards reflect current industry best practices in Ontario.

¹⁴ O.F.M.E.M. 2013 Grandfathering Policy

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/FireServiceResources/Communiques/OFM_Com_2014-04at.html

Table 7: Applicable NFPA Pro-Qual Standards

NFPA Standard	Role	Description
NFPA 1031 – Standard for Professional Qualifications for Fire Inspector and Plans Examiner	Fire Inspector I	An individual at the first level of progression who has met the job performance requirements specified in this standard for Level I. Fire Inspector I basic fire inspections applies codes and standards.
NFPA 1031 – Standard for Professional Qualifications for Fire Inspector and Plans Examiner	Fire Inspector II	An individual at the second or intermediate level of progression who has met the job performance requirements specified in this standard for Level II. The Fire Inspector II conducts most types of inspections and interprets applicable codes and standards.
NFPA 1031 – Standard for Professional Qualifications for Fire Inspector and Plans Examiner	Fire Inspector III	An individual at the third and most advanced level of progression who has met the job performance requirements specified in this standard for Level III. The Fire Inspector III performs all types of fire inspections, plans review duties, and resolves complex code-related issues.
NFPA 1033 – Standard for Professional Qualifications for Fire Investigator	Fire Investigator	An individual who has demonstrated the skills and knowledge necessary to conduct, coordinate and complete fire investigations.
NFPA 1035 – Standard for Professional Qualifications for Fire and Life Safety Educator, Public Information Officer, and Juvenile Firesetter Intervention Specialist	Fire and Life Safety Educator I	The individual who has demonstrated the ability to coordinate and deliver existing educational programs and information.

NFPA Standard	Role	Description
NFPA 1035 – Standard for Professional Qualifications for Fire and Life Safety Educator, Public Information Officer, and Juvenile Firesetter Intervention Specialist	Fire and Life Safety Educator II	The individual who has demonstrated the ability to prepare educational programs and information to meet identified needs.
NFPA 1035 – Standard for Professional Qualifications for Fire and Life Safety Educator, Public Information Officer, and Juvenile Firesetter Intervention Specialist	Fire and Life Safety Educator III	The individual who has demonstrated the ability to create, administer, and evaluate educational programs and information.

It is recommended that personnel conducting fire safety inspections have the skills and competencies included within the NFPA 1031 - Fire Inspector I. It is recommended that personnel performing fire inspections involving more complex issues and requiring interpretation of various legislation and OFC and OBC requirements be qualified to NFPA 1031 - Fire Inspector II. In our experience, successful completion of courses in addition to NFPA 1031 I and II requirements including OFC Parts 2 & 6, Part 4, Parts 3 & 5, Courtroom Procedures, and Effective Inspections of Commercial Cooking Equipment are necessary to ensure Fire Prevention and Public Education Division personnel are trained to effectively perform their roles and responsibilities.

Personnel responsible for developing and delivering public education programs should have the skills and competencies included within the NFPA 1035 – Fire and Life Safety Educator I.

Under the FPPA, only personnel designated as Chief Fire Officials (CFO) have the authority to approve alternative solutions, compliance alternatives, compliance equivalency, fire safety plans, life safety studies and fire drill scenarios. Fire Chiefs are designated as CFO by virtue of their position. It is industry best practice that any delegation of such authority be done in writing. Recent legislated changes require all CFO approving fire safety plans for buildings containing care occupancies, care and treatment occupancies or retirement homes, to successfully complete mandatory

training as approved by the Fire Marshal. Currently, this required training is offered through Public Services Health & Safety Association (PSHSA). All BFD personnel required to complete this mandatory training have been trained and delegation from the Fire Chief for these approvals is established.

6.3.2 Existing Fire Prevention Division Staff Training

As part of the data collection process for this FMP, documentation provided by the BFD was utilized to determine the level of training of Fire Prevention and Public Education Division resources. **Table 8** below summarizes the current training of the staff resources available to deliver fire prevention and public education programs and activities.

As shown, all fire prevention personnel have been trained to NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner Level I and five personnel have been trained to NFPA 1031 Level II.

There are seven staff who have been trained to NFPA 1035: Standard for Professional Qualifications for Fire and Life Safety Educator, Public Information Officer, and Juvenile Firesetter Intervention Specialist Level I and four trained to NFPA 1035 Level II.

All fire prevention personnel have received public information officer training, PSHSA training for the approval of fire safety plans, and courtroom procedure training.

Table 8: Existing Fire Prevention and Public Education Division Staff Training*

Position	CFPO	FPO	FPI 1	FPI 2	FPI 3	FPI 4	PEO
NFPA 1031, Level I	Yes	Yes	Yes	Yes	Yes	Yes	No
NFPA 1031, Level II	Yes	Yes	Yes	Yes	Yes	No	No
NFPA 1035, Level I	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NFPA 1035, Level II	No	No	Yes	Yes	No	Yes	Yes
NFPA 1035, Public Information Officer	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Position	CFPO	FPO	FPI 1	FPI 2	FPI 3	FPI 4	PEO
NFPA 1033	No	Yes	No	Yes	No	No	No
Commercial Cooking	No	No	No	Yes	Yes	No	No
Courtroom Procedures	Yes	Yes	Yes	Yes	Yes	Yes	No
BCIN Legal Course	Yes	Yes	No	Yes	No	No	No
BCIN Fire Protection Course	Yes	Yes	No	Yes	No	No	No
Public Services Health & Safety Association (PSHSA)	Yes	Yes	Yes	Yes	Yes	Yes	No

* It is noted that the Fire Prevention Inspector (FPI) #5 position is currently vacant.

Source: BFD

Based on our review of the applicable the NFPA Pro-Qual Standards and our knowledge of current industry best practices, **Table 9** outlines the recommended training for personnel assigned to develop and deliver the BFD fire prevention and public education programming now and in the future. These recommendations recognize that in some instances, specific training is not currently available in Ontario, including NFPA 1031 – Fire Inspector Level III. When training for these higher standards becomes available, it is recommended that they be made accessible to department senior staff such as the Chief Fire Prevention Officer and/or the Fire Prevention Officer.

Table 9: Training Targets for Fire Prevention and Public Education Division Staff

Divisional Task	Proposed Professional Training
Fire Inspections	NFPA 1031 – Fire Inspector II BCIN- General Legal and Fire Protection
Plan Examination	NFPA 1031 – Plan Examiner II
Fire Safety Plan Approval	As approved by the OFMEM (PSHSA course)
Public Education: Program Design and Evaluation	NFPA 1035 - Fire and Life Safety Educator II

Divisional Task	Proposed Professional Training
Public Education: Program Implementation	NFPA 1035 - Fire and Life Safety Educator II
Media Interviews and Advisories	NFPA 1035 - Public Information Officer

6.4

Fire Prevention Policy

A fire prevention policy is a valuable tool, reflective of current industry best practices, providing clear direction and clarification to department personnel. Policies, particularly fire prevention and public education activities and programs that are necessary to define goals and objectives, inform trend analysis, and inform ongoing review of these services to the public.

The components of a fire prevention policy are provided in PFSG 04-45-12 Fire Prevention Policy which presents a framework for developing a fire prevention policy. An example of the purpose of a fire prevention policy includes:

- To establish policies and procedures for fire department personnel for fire prevention, public education programs and activities as a primary means of protecting lives and property from fire
- To maintain compliance with the recommended fire prevention and public education activities as required by the FPPA

A fire prevention policy should also describe the following fire prevention and fire safety education programs and services such as:

- Fire inspection activities
- Fire code enforcement
- Fire and life safety education
- Fire investigation and cause determination
- Fire loss statistics
- Fire department operational guidelines identifying how, when and where activities will be conducted

There is a department policy and a Standard Operational Guideline specific to inspections upon request or complaint. Department Policy 046 and SOG 1600-018-2 –

Fire Prevention Inspections – Routine, Complaint and Request describe the BFD’s responsibility to conduct request or complaint inspections. These documents also state that the BFD will provide regular inspection that is established and maintained from an assessment of specific community risk based on evaluation tools. Although these documents contain many elements of the recommended fire prevention policy (noted above), it does not fully reflect all fire prevention and public education activities currently undertaken by BFD Fire Prevention and Public Education Division personnel. The analysis within this FMP presents a more detailed analysis of the department’s current fire prevention and public education programming.

It is recommended that the BFD review existing policies and establish new policies specific to fire prevention mandatory inspection types and cycles, and to consider including reference to the Establishing and Regulating by-law in the Policy, as approved by council.

6.5 Fire Prevention and Public Education Division Activity and Workload Tracking

NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations further supports the use a fire prevention policy as described in the preceding section. A comprehensive fire prevention policy reflects current industry best practices to establish the level of service to be provided by the Fire Prevention and Public Education Division including specific objectives for public education, inspections, code enforcement, plan review, and investigations. NFPA 1730 also supports the use of personnel and resource tracking to determine the needed resources to meet the established level of service. It is not uncommon that fire departments do not have a sense of the capability of their current resources to meet service levels due to a lack of data and tracking of historic effort. This is commonly compounded by the lack of performance measures in place against which to track work load effort.

Based on consultation with the BFD and information collected as part of this fire master planning process, it was learned that the BFD Fire Prevention and Public Education Division currently tracks the workload of the division’s dedicated staff resources as well as the fire prevention and public education activities taking place. **Figure 5** and **Figure 6** summarize the fire safety inspections, public education events and related activities of

the Fire Prevention and Public Education Division over a five-year period (2015 to 2019).¹⁵

¹⁵ Note that 2020 was not included in this analysis as the ability for B.F.D. to conduct inspections and provide regular public education programming was affected by the COVID-19 pandemic.

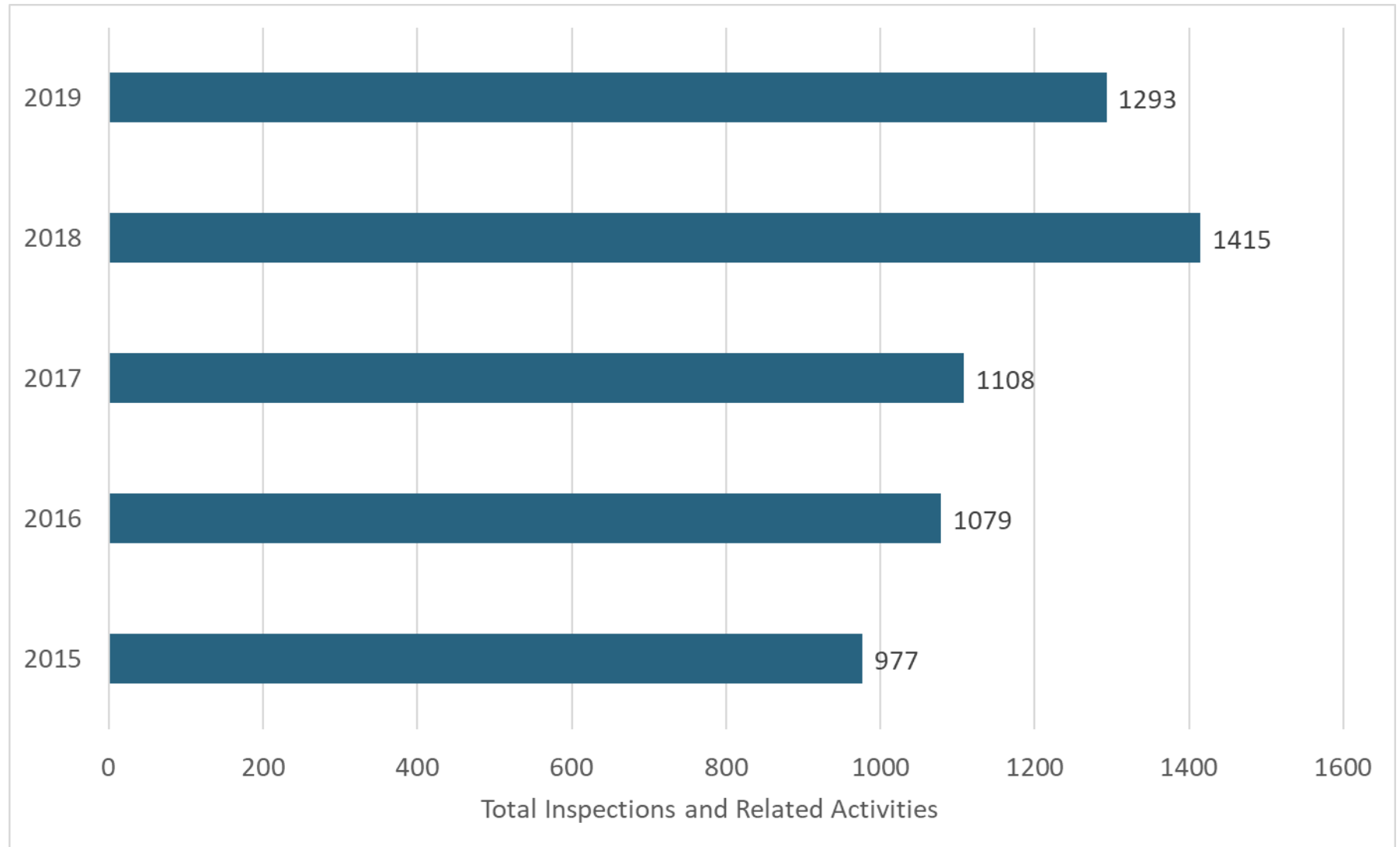
Figure 5: Total Inspections and Related Activities Tracking (2015-2019)

Figure Source: BFD Data

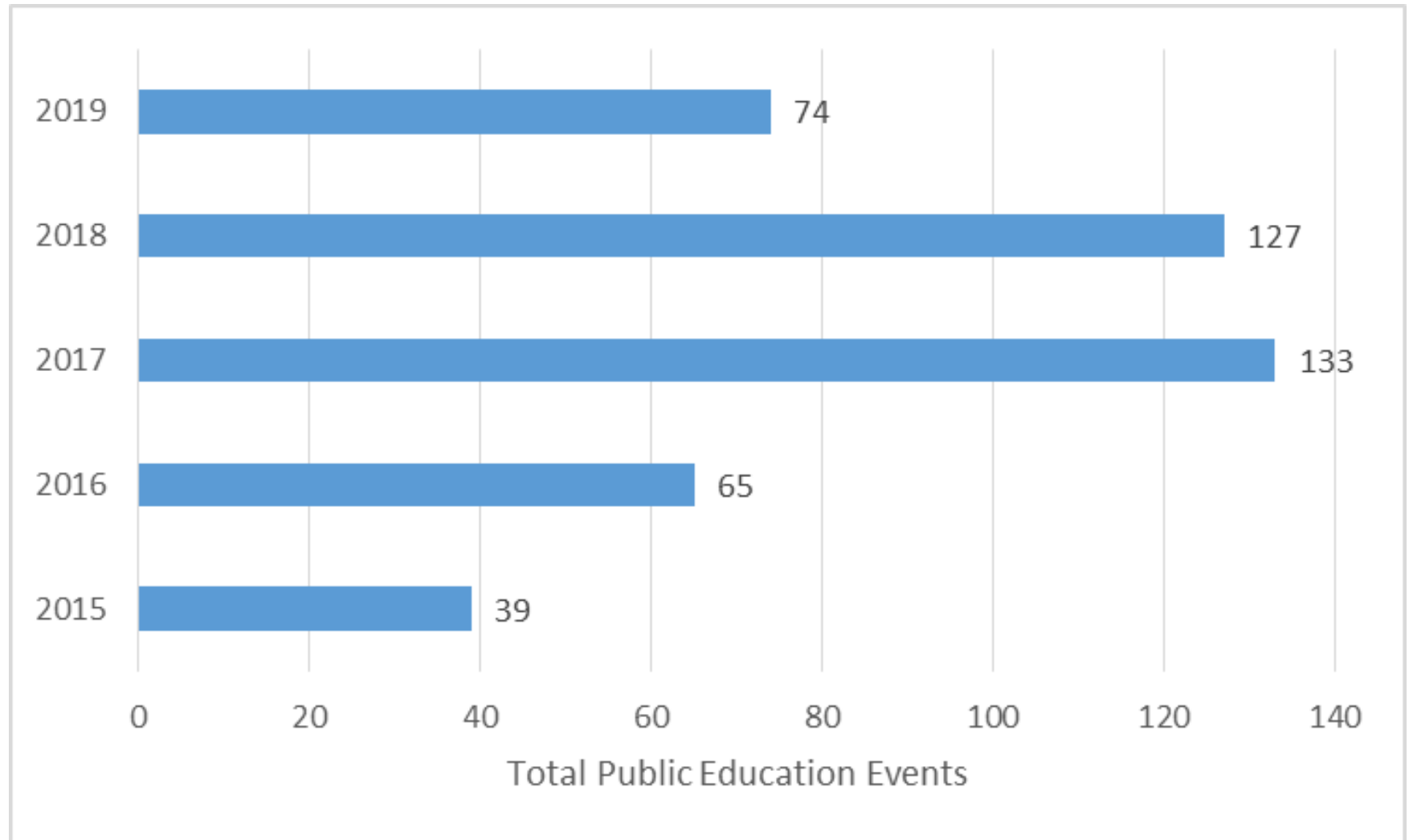
Figure 6: Total Public Education Events Tracking (2015 to 2019)

Figure Source: BFD Data

Analysis of the total fire safety inspections conducted by the BFD, as shown in **Table 10**, indicates that the largest percentage of the division's inspection-related workload is associated with follow ups as recorded in the R.M.S. software database.¹⁶ The second largest percentage of the division's current workload is assigned to routine inspections, which have significantly increased over this five year timeframe.

In 2019, The BFD performed a total of 1,293 inspections, up 32% from 2015, which highlights the increase in overall prevention activities. These inspections take time and are coordinated based on legislation, Council approved inspection types and they are impacted by community growth and legislative changes.

There were 123 complaints received by the department requiring a fire safety inspection by the BFD, an increase of 89% since 2015. Depending on the nature and validity of the complaint, the workload associated with this requirement can be significant. Responding to requests and complaints currently consumes approximately 20% of the total existing workload capacity of the Fire Prevention and Public Education Division.

Table 10: Inspections and Related Activities Tracking by Inspection Type (2015-2019)

Inspection/Related Activity Type	2015	2016	2017	2018	2019
Vulnerable Occupancies	39	40	39	43	43
Complaint Inspections	65	75	82	109	123
Request Inspections	126	70	153	107	133
Licensing	34	30	20	21	12
Routine Inspections	29	154	152	384	340
Other Calls for Action	169	223	28	67	74
FDM Follow-ups	472	452	603	633	507
Burn Permit	43	35	31	51	61
Total	977	1,079	1,108	1,415	1,293

Table Source: BFD

¹⁶ As indicated by the RMS follow ups are requests for action from fire crews as the result of an emergency response to a location. Follow ups may or may not necessitate a fire safety inspection or require a site visit from Fire Prevention Division personnel.

In our experience, there is great value in collecting data with respect to fire prevention and public education initiatives to enhance the reporting processes and to evaluate the effectiveness of programming.

To assist in the assessing division resource needs, NFPA 1730: Standard on Organization and Deployment of Fire Prevention, Inspection, and Code Enforcement, Plan Review, Investigation, and Public Education Operations presents sample tracking tables for fire prevention and public education activities. The tracking tables include information like separating inspections by occupancy type, identifying the number of facilities in use, task time, inspection frequency, and resulting total time. Other tables include similar information including number of tasks, time per task, commute time, other time (including administrative functions), and a resulting total. In our experience, there is value in collecting and tracking further data with respect to fire prevention and public education. Examples of data that support the assessment of resource needs within the Fire Prevention and Public Education Division include the following:

- Number/percentage of VO / routine inspections in compliance at time of inspection.
- Number of Fire Safety Inspection Orders issues.
- Number of re-inspections required per property.
- Breakdown (by number/percentage) of properties inspected by OBC occupancy type.
- Percentage/number of occupancies inspected that were/were not compliant with smoke alarm legislation.
- Percentage of occupancies/number inspected that were/were not compliant with carbon monoxide legislation.

These are shown as examples of the types of data identified in NFPA 1730.

6.6 Existing Fire Inspection Program

A fire inspection program is one of the core elements within the first two “lines of defence”. A fire inspection program must comply with the requirements of the following regulations and directive described below.

6.6.1 Ontario Regulation 150/13: Enhancing Fire Safety in Occupancies Housing Vulnerable Ontarians

Ontario Regulation 150/13: Enhancing Fire Safety in Occupancies Housing Vulnerable Ontarians was filed on May 9, 2013. This regulation introduced amendments to the OFC

that came into force on January 1, 2014. This regulation is intended to enhance fire safety in occupancies that house vulnerable occupants. The legislation applies to care, care and treatment and retirement homes that are regulated under the Retirement Homes Act. The OFMEM led the development of this new regulation in consultation with a Technical Advisory Committee of industry experts.

6.6.2 **Ontario Regulation 364/13: Mandatory Inspection – Fire Drill in Vulnerable Occupancy**

Ontario Regulation 364/13: Mandatory Inspection – Fire Drill in Vulnerable Occupancy requires that a fire inspector observe a fire drill scenario representing the facility's lowest staffing complement (as approved by the Chief Fire Official), conduct a fire safety inspection (utilizing the Annual Inspection Checklist which forms part of OFM Directive 2014-002: Vulnerable Occupancies – Fire Drill Scenarios, Fire Drill Observations, Fire Safety Inspections, as a minimum level of inspection), and then update the OFMEM's Vulnerable Occupancy Registry, as appropriate.

BFD Policy 045 Fire Safety Enhancements in Vulnerable Occupancies was established in 2014 and refers to the department's compliance with the requirements of the regulations and directive described above.

6.6.3 **Ontario Regulation 365/13: Mandatory Assessment of Complaints and Requests for Approval**

In compliance with Ontario Regulation 365/13: Mandatory Assessment of Complaints and Requests for Approval, upon receipt of a complaint or request for assistance to comply with the Fire Code, the BFD performs a fire safety inspection.

As previously noted in this FMP, BFD SOG 1600-018-2 – Fire Prevention Inspections – Routine, Complaint and Request and Department Policy 046 describe the BFD's responsibility and the procedures for conducting request or complaint inspections and routine inspections.

6.6.4 **Routine Fire Inspections**

In comparison to responding to a request or complaint, routine fire inspections are proactive inspections conducted by a department in response to identified fire risks.

A routine inspection cycle was approved by council in 2000 as referenced in BFD-01-00 (CC-11-00) Fire Safety/Code Inspection Cycles. The inspection cycles should be reviewed

in comparison to NFPA 1730 using a building/risk profile versus an occupancy/building type, and that review used to set service levels as part of the review and update of the Establishing and Regulating By-law, as approved by council.

6.6.5 Fire Safety Audits

SOG 1600-014 - Steps to Safety Home Visit Program, and SOG 1600-017 - Smoke and CO Alarm Home Audits During Response describe the use of on-duty fire suppression crews to conduct fire safety audits.

NFPA 1452: Training Fire Service Personnel to Conduct Community Risk Reduction for Residential Occupancies, outlines that “4.1.1 conducting home safety surveys in residential occupancies provides one of the best means of delivering education through direct contact with residents of the community.”

The use of on-duty firefighters to conduct fire safety audits has proven to be a worthwhile effort. In house training sessions provided firefighters with training to support the program. In our experience, this strategy is a cost-effective and proven approach to increasing fire prevention and public education programs. In 2019, when the Steps to Safety Program was in effect, there is evidence of approximately a 20% reduction in fire experience in that year alone.

The use of on-duty full-time firefighters is becoming an increasingly practice to optimize the utilization of available staff resources for the delivery of fire prevention and public education programs. One approach to developing such a staff resource strategy being implemented by the BFD includes providing new firefighter recruits with training to have the appropriate skills and competencies to provide fire prevention and public education services in addition to the required firefighter training. This can be built into the update to the Career Path document to support firefighter career development and succession planning.

This includes training new recruits to the NFPA 1031 – Fire Inspector Level I and NFPA 1035 – Fire and Life Safety Educator Level I. Until recently, the BFD’s recruit training strategy trained new firefighter recruits to NFPA 1031 or 1035, however due to recent COVID pandemic restrictions, this training was removed from the recruit training program. It is recommended that this training be re-instated following the pandemic

and be included as a requirement for all new recruits. Further discussion can be found **Section 7.0- Training Division.**

6.6.6 Fire Safety Enforcement

The OFMEM TG 01-2012 Fire Safety Inspections and Enforcement outlines recommended fire safety inspection and enforcement practices for fire departments in Ontario and provides municipalities with strategies, particularly related to enforcement of the Ontario Fire Code in situations where achieving compliance has or may be more difficult to achieve. OFMEM TG 01-2012 Fire Safety Inspections and Enforcement is intended to assist municipalities in efficiently and effectively meeting fire safety and enforcement responsibilities. Historically, enforcement was not commonly used by municipalities working with property owners to achieve compliance with the Ontario Fire Code. This trend is changing across the province with the support of the OFMEM, in part through the introduction of this OFMEM Technical Guideline.

Dillon's review of this guideline indicates that it supports the direction of the first two lines of defence to optimize the level of fire protection services within a community. In our experience, there is substantial value to utilizing a variety of techniques to assist a property owner achieve compliance with the Ontario Fire Code (OFC) Engaging and educating the public about its responsibility to comply with the OFC is often enough to bring about compliance, however, there are instances where enforcement may be necessary.

As described in SOG 1600-018 – Fire Prevention Inspections – Routine, Complaint and Request, the BFD utilizes Inspection Orders for matters of non-compliance with the Ontario Fire Code, in keeping with OFMEM TG 01-2012. SOG 1600-018 states that compliance should be achieved within 30 days of the Inspection Order service date, generally. Where an Inspection Order has not been complied with, a Fire Prevention Inspector, in consultation with the FPO and CFPO can consider a Summons to Court under Part III of the Provincial Offences Act.

Another enforcement option made available to fire departments under the Provincial Offences Act is the use of Certificate of Offence, commonly known as a ticket or a Part I. Ontario Regulation 52/15: Proceedings commenced by a Certificate of Offence was filed on March 11, 2015, expanding the number of ticketable offences under the Ontario Fire

Code. At present, the BFD issues certificates of offence (tickets) and initiates Part III of the Provincial Offences Act prosecutions as required.

In our view, there would be value in tracking benchmarks associated with enforcement activity within the City. Examples of benchmarks include:

- Fire department personnel time spent enforcing the Ontario Fire Code, specifically time spent preparing for court, attending court, document preparation, issuing certificates of offence, preparing fire safety inspection orders
- Number of enforcements brought before the Provincial Court

6.6.7 Hoarding

Hoarding, or the excessive accumulation of combustible materials has become an increasing challenge for BFD. BFD SOG 1600-23 – Hoarding provides guidance to Fire Prevention and Public Education Division staff who may encounter situations of hoarding in residential dwelling units where excessive amounts of combustible materials may pose a fire or life safety risk. The SOG references Fire Marshal Directive 2014-003, requiring fire departments to assess all fire safety complaints. Guidance within the SOG includes entry, inspection procedures, determination of excessive accumulation, compliance options, personal protective equipment, fire dispatch hazard notification, as well as the responsibility of fire prevention staff to report child abuse, animal cruelty, an individual in immediate danger of injuring themselves or someone else and pest infestation. In our view, SOG 1600-023 is comprehensive and in keeping with industry best practices.

6.7 Fire Investigations and Cause Determination

Where fires meet specific criteria, the local fire department can request assistance from the OFMEM to conduct these investigations. The criteria and process for this request are contained in Fire Marshal's Directive 2019-001, which was updated in May 2019.

The findings of fire investigations can help a fire department develop public education and fire prevention initiatives tailored to the fire incidents experienced locally.

At present, the BFD conducts fire investigations for origin of fire and cause determination.

6.8 Fire Safety Plans

Fire Safety Plans are required for select occupancy types identified within the Ontario Fire Code (OFC). These occupancies include Group A – Assembly occupancies, and Group B – Care or Detention occupancies (Ontario Regulation 150/13). All remaining major occupancy groups (e.g., Group C – Residential, Group F – Industrial, etc.) also require fire safety plans depending on their occupancy load or other building-related features such as storeys below grade.

The OFC also details the content requirements of a fire safety plan (OFC Section 2.8.2.1). These requirements include emergency procedures in the case of a fire such as use of the fire alarm, notifying the fire department, and instruction and evacuation of occupants. Fire safety plans must also designate supervisory staff, and detail for the holding of fire drills, control of fire hazards, and maintenance of building facilities. Fire Safety Plans provide an avenue for the training of building staff in the case of a fire incident; for example, care providers at a long-term care facility would know their role in an evacuation procedure.

The process of reviewing a fire safety also provides the opportunity for the fire department to gain a better understanding of nature of the industrial occupancies within the community. The review process also supports fostering community relationships between industry partners and the City. In our experience, most municipal jurisdictions recoup the cost of reviewing fire safety plans on a cost recovery basis. Further discussion about cost recovery is found in **Section 5.0 - Administration** of this FMP.

Staff who are assigned responsibilities such as approving fire safety plans should be Assistants to the Fire Marshal, and formally delegated the authority as Chief Fire Officials (CFO). It is important to note that Ontario Regulation 150/13 and Fire Marshal's Directive 2013-14 require all CFOs approving fire safety plans for buildings containing care occupancies, care and treatment occupancies or retirements homes, to successfully complete mandatory training as approved by the Fire Marshal. Currently, as directed by the OFM, this training is provided by Public Services Health & Safety Association (PSHSA).

A City of Burlington document titled Delegation of Authority dated June 30, 2020, outlines the Fire Chief delegating authority of Chief Fire Official to the Chief Fire

Prevention Officer and in their absence a Deputy Fire Chief, until such time it is revoked. All fire prevention staff have completed the required training to approve fire safety plans. The career path document should include reference to this for prevention officers and members of the management team.

6.9 Building Pre-Incident Planning

In comparison to a Fire Safety Plan, the process of pre-incident planning within the fire service is intended to provide a proactive awareness within fire departments about key building features, possible hazards, and other pertinent characteristics about an existing occupancy. Pre-incident planning is typically conducted by on-duty firefighters with information provided from a variety of sources including existing information from the City, information gathered from the building owner, and site visits. The value of a building pre-incident plan is to provide site specific education and information to fire suppression crews in advance of responding to an emergency incident.

The primary purpose of pre-plans is to assist fire suppression staff with formulating a plan and increasing awareness of the sites hazards on the way to the incident. BFD SOG 1200-001 – Emergency Response Pre-Planning by Suppression Staff provides guidance to suppression staff while performing a pre-incident plan. In order to gather information.

The findings of the CRA identifies risks and key findings that should be considered within an enhanced pre-planning program. For example, the CRA identifies that 49.5% of the City’s residential building stock was built prior to the introduction of the OFC. This means many of these residential buildings may include older construction methods such as “balloon frame” construction whereby the exterior walls extend from the first floor to the roof with no fire stops. It would be valuable for on-duty crews to identify these occupancies and consider developing pre-incident plans.

The findings of the CRA provide valuable insight into identifying the fire-related risks within the community, and specifically the types of building occupancies that should be prioritized for pre-planning. In our view, there would be added benefit in specifying the types of building occupancies that should be prioritized for pre-planning in SOG 1200-001 – Emergency Response Pre-Planning.

6.10 Building Plans Review

Building plan review is undertaken by the City's Building and By-law Department. Our review indicates a positive working relationship between the BFD Fire Prevention and Public Education Division and the Building and By-law Department. The BFD Fire Prevention and Public Education Division is not involved in the building permit applications including plan review or inspections with the exception of their involvement on the Alternate Solution Review Committee which is circulated on any Alternate Solutions Permits under the OBC. The BFD also holds a seat on the Site Plan Review Committee to review and comment on future development applications.

6.11 Accessory Dwelling Units

Standard Operating Guideline 1600-024 Accessory Dwelling Units establishes guidelines for all fire prevention staff who are involved in fire inspection activities related to Accessory Dwelling Units, which includes direction to work with the City's Building Department and property owners to ensure compliance with both the Ontario Building Code and the Ontario Fire Code. SOG 1600-024 provides BFD Fire Prevention and Public Education Division personnel with a checklist to be utilized in the event they become aware of an Accessory Dwelling Unit. The checklist includes temporary fire protection and life safety measures Fire Prevention and Public Education Division personnel are to implement should the Accessory Dwelling Unit be found non-compliant with the OBC and/or the OFC.

6.12 False Alarms

For the period from January 1st, 2015 to December 31st, 2019 CO False Alarms (4.8%) and False Fire Calls (13.3%) accounted for 18.1% of the total emergency call volume of the BFD (Office of the Fire Marshal and Emergency Management, Municipal Emergency Calls by Response Type Class). One strategy the BFD has implemented to target the reduction of these types of incidents has been to adopt a cost recovery strategy to reduce the amount of nuisance alarms it receives.

By-law 092-2020 provides the City with the authority to charge a fee for false alarm responses related to work being performed on the fire protection system and failing to notify the BFD as well as fire protection system malfunction, or accidental or human error related to fire protection equipment. Fees are charged based on the number of

apparatus and personnel dispatched and how many false alarms have occurred at the address within a 12-month period. In our view, the BFD has established a strategy for addressing nuisance alarm calls through the use of enforcement.

6.13 Proposed Enhanced Fire Inspection Program

The analysis and recommendations presented within this FMP emphasize the importance of the first two lines of defence including the optimization of public education and prevention and the utilization of fire safety standards and enforcement. This FMP places significant emphasis on these areas by recommending the following strategic priorities as indicated in **Section 4.4.1** of this report:

- As required by Ontario Regulation 378/18: Community Risk Assessments the City of Burlington is committed to utilizing community fire risk analysis to inform all decisions associated with the delivery of fire protection services within the City of Burlington.
- The Burlington Fire Department will prioritize the optimization of the first two lines of defence, including public education and fire prevention, and the utilization of fire safety standards and fire code enforcement as the foundation of providing a comprehensive fire protection program within the City of Burlington.

Through its leadership in recognizing the need to address the Ontario Regulation 150/13, Enhancing Fire Safety in Occupancies Housing Vulnerable Ontarians, as part of this fire master planning process, the City has also acknowledged the importance of an effective and efficient fire inspection program.

The proposed fire inspection cycles have been informed by the findings of the CRA and specifically the following identified risks:

- Group C - Residential Occupancies represent 93.53% of the City's existing property stock, and over the five-year period from January 1, 2015 to December 31, 2019 were associated with 72.24% of the structure fires within the City.
- The 2016 Census data indicates that 49.51% of the City's Group C-Residential building stock was built prior to the introduction of the 1981 Ontario Fire Code.
- The City currently has 105 buildings defined by the OBC as high-rise buildings with a floor level 18 metres (59 feet) above grade, or 6 storeys. These buildings are distributed throughout the urban area.

- The City has 225 buildings with a total building area (footprint) that exceed 50,000 square feet (4,655 square metres). These buildings are predominantly located in the general employment and business corridor along the QEW.
- The City of Burlington currently has forty-three (43) registered vulnerable occupancies.
- There are a number of identified heritage buildings within Burlington, many of which were constructed prior to the introduction of the Ontario Fire Code.
- 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. According to the 2016 Census, seniors represent 19.27% of the City's total population.
- Most reported fire related civilian injuries (47) occurred in Group C – Residential Occupancies.

Developing a more proactive fire inspection and enforcement program has also been informed by the key findings contained within the CRA that indicate the following:

- The City includes areas of building stock that have higher density and, as such, greater potential for exposure in the event of a fire. Statistics Canada 2016 census data indicates that 18.65% of the City's building stock is comprised of row housing, this is 9.74% higher than the Province (where 8.91% of provincial building stock is row housing).
- BFD identified several properties within Burlington as having an increased potential for high fire risk in regard to fuel load such as industrial storage facilities and chemical processing facilities.
- In addition to 43 registered vulnerable occupancies, the City has 63 schools and 46 identified daycare centres, representing higher fire life-safety risks due to the number of children attending these facilities.
- Over the five-year period from January 1, 2015 to December 31, 2019, the City averaged 71 structure fires per year.
- Over the five-year period from January 1, 2015 to December 31, 2019 structure fires occurring in Group F – Industrial occupancies account for 8.22% of total structure fires within the City and 36.19% of total structure fire loss (A significant dollar loss occurred at a large industrial facility in 2017. This single incident resulted in a \$10 million dollar loss, substantially impacting the City's fire loss statistics during the study period).

- Of the fires occurring within the City over the five-year period from January 1, 2015 to December 31, 2019, 24.93% of fires had a reported ignition source of cooking equipment, which is 7.64% higher than the Province (17.29%).
- Of the fires occurring within the City over the five-year period from January 1, 2015 to December 31, 2019, 19.83% of fires had a reported ignition source of open flame tools/smokers articles, which is 5.87% higher than the Province (13.96%).
- Of the fires occurring within the City over the five-year period from January 1, 2015 to December 31, 2019, 13.60% of fires had a reported ignition source of miscellaneous, which is 3.70% higher than the Province (9.90%).
- Over the five-year period from January 1, 2015 to December 31, 2019, of the fire loss incidents in Group C – Residential occupancies, 16.14% of incidents did not have a smoke alarm present (compared to 17.28% in the Province).
- Over the five-year period from January 1, 2015 to December 31, 2019, of the fire loss incidents in Group C – Residential occupancies, 54.72% of incidents had a smoke alarm present and operating compared to 45.20% in the Province.

Group C - Residential occupancies represent the most at risk type of property stock in the City of Burlington based on their age, historical fire loss, number of fire-related injuries and fatalities and overall percentage of property stock within the City. Group C - Residential occupancies include a wide range of building types including:

- Single-detached dwellings
- Multi-unit stacked townhouses and low-rise multi-unit buildings
- Seniors residence buildings
- High-rise multi-unit buildings
- Boarding, lodging and rooming houses
- College/university and student rental housing
- Hotels and motels

Table 11 presents representative occupancy fire inspection cycles or performance targets prioritizing the identified high-risk occupancies within the community and specifically the City's legislative requirements, including those identified by Ontario Regulation 150/13: Enhancing Fire Safety in Occupancies Housing Vulnerable Ontarians.

These inspection frequency targets can be useful in reviewing the Burlington specific inspection cycles as part of the comparison to NFPA 1730 using a building/risk profile

versus an occupancy/building type. The BFD should undertake the review of inspections cycles and information be provided back to council for consideration and approval.

In our experience, the transition to revised fire inspection cycles and anticipated growth projects, will require the City to consider the workload of its current resources, options for utilization of other existing staff resources such as on duty Suppression Division staff resources and the need to monitor the need for additional staff resources within the Fire Prevention and Public Education Division.

An important element of this transition will be consideration of the recommended training requirements of all staff assigned to conduct fire inspections and related tasks. In our view, the BFD should continue with the targeted fire inspections of Group C - Residential occupancies, with priority to the areas of the City identified by the CRA

Table 11: Representative Occupancy Fire Inspection Targets

Group	Occupancy Type	Proposed Inspection Frequency
Group A	Assembly	2 Years
Group B	Care/Detention	Annually
Group C	Low-rise multi-family, high-rise multi-family, two-unit residential	Complaint and Request. Steps to Safety Home Visit Program, Smoke and Carbon Monoxide Alarm, Home Audit Program, Targeted Fire Inspection Program
Group C	Seniors residential (whether classified as a vulnerable occupancy or not)	Annually
Group C	Boarding, lodging, rooming	Annually
Group C	Group homes (whether classified as a as vulnerable occupancy or not)	Annually
Group C	Hotels/motels	3 years
Group D	Business	Complaint and Request. Fire safety audits by in-service inspections by suppression crews
Group D	Business licence	Complaint or request.

Group	Occupancy Type	Proposed Inspection Frequency
Group E	Mercantile	Complaint and Request. Fire safety audits by in-service inspections by suppression crews
Group F	F1-High Hazard	Complaint or request. Specific facilities may be deemed to warrant more frequent inspection due to fire safety concerns (e.g. fuel load, type of processing, etc.)
Group F	F2-Medium Hazard	Complaint or request. Specific facilities may be deemed to warrant more frequent inspection due to fire safety concerns (e.g. fuel load, type of processing, etc.)
Group F	F3-Low Hazard	Complaint or request. Specific facilities may be deemed to warrant more frequent inspection due to fire safety concerns (e.g. fuel load, type of processing, etc.)

The CRA provides a comprehensive analysis of the City's current identified risks and key findings that can be utilized to further inform a targeted fire inspection program. In our view, one of the most significant benefits of conducting a Community Risk Assessment is to provide a comprehensive analysis of existing fire related risks in order to prioritize fire prevention and public education programming based on identified fire risk.

6.14 Existing Public Education Program

Public education programs provided by the BFD are currently coordinated by one Public Education Officer (PEO). The PEO and four Fire Prevention Inspectors have attained the NFPA 1035 – Standard for Professional Qualifications for Fire and Life Safety Educator. **Table 8** presents the other training completed by these staff. It should be noted that these fire prevention inspectors are not fully dedicated to the delivery of public education programs, however, they do assist the PEO when needed to participate in public education activities.

Public fire and life safety materials are administered through community programs in-person, fire station tours, social media, the fire department's website, local media

(television broadcasts, editorials as well as radio public service announcements) and through local events and seasonal activities (e.g., Fire Prevention Week, Carbon Monoxide Awareness Week, Burlington Home and Lifestyle Show, etc.). The BFD website provides valuable information related to a wide range of fire and life safety related topics including:

- Apartment Fire Safety
- Barbeque Safety
- Barn Fire Prevention
- Candles
- Cooking Fire Safety
- Electrical Safety
- Family Fire Escape Plan
- Fire and Life Safety for People with a Disability
- Fire Extinguishers
- Fireplaces and Woodstoves
- Fireworks
- Heating Safety
- Open Air Burning
- Seasonal Safety
- Smoke Alarms and Carbon Monoxide Alarms
- Smoking Fire Safety
- Student Safety

Fire and life safety materials administered via social media and traditional media outlets are delivered based on key messages related to the fire risks relevant to each season. Seasonal social media and a media relation content plan is summarized in **Table 12**. SOG 1400-043: BFD Social Media Use, Roles & Responsibilities clearly articulates the expectations and guidelines for acceptable use of social media by BFD personnel.

Table 12: Seasonal Messaging

Season	Focus of Messaging
Fall	Carbon monoxide, fireplace safety, burning of leaves, smoke alarm maintenance, winterizing, fire prevention/carbon monoxide awareness week
Winter	Snow removal around hydrants and house numbers, carbon monoxide and fuel-fired appliance maintenance, electrical safety, cooking safety, safe driving, holiday fire hazards (such as trees, wrapping paper, fireplaces, etc.)
Spring	BBQ safety, smoke alarm battery maintenance, spring forward battery change, emergency preparedness week
Summer	BBQ safety, open air burning, outdoor fire safety, chiminea safety, camping safety

Source: BFD

Dillon’s research indicates that the current BFD public educational programming is comprehensive and targets specific demographics based on their unique situations, occupations and needs, with numerous programs and resources dedicated to educating seniors, students, children, vulnerable occupants and people with disabilities. Examples of the specialized educational programs the department provides are presented in **Table 13**.

Table 13: Existing Public Education Program Summary

Program Name	Audience	Description
TAPP-C Arson Prevention Program	Children and Youth	The Arson Prevention Program for Children (TAPP-C) Arson Prevention Program is a juvenile firesetter intervention program for children and youth, ages 2 through 17. In this program, fire service and mental health professionals work with the child and family to change dangerous firesetting behaviours. The program is delivered locally through partnerships with the Halton District School Board, Halton Regional Police Service, Children's Aid Society, The Reach Out Centre for Kids and other regional fire departments.
Community Helpers and Learn not to Burn curriculum	Kindergarten and Grade 1	Upon request, the BFD offers classroom presentations to enhance curriculum-based learning. The Learn Not to Burn curriculum integrates literacy, movement and dramatic play to provide developmentally appropriate fire safety messaging and programming for young children. ¹⁷
<ul style="list-style-type: none"> • Science of Fire curriculum support • Lesson support for science, civics, and cooking • Personal safety and life-skills curriculum 	<ul style="list-style-type: none"> • Grade 7 and Grade 9 • High School Students • Special Needs Students 	The BFD offers classroom presentations to enhance curriculum-based learning. Developmentally appropriate activities are geared at increasing students' knowledge and understanding of fire while promoting fire safety.

¹⁷ Source: National Fire Protection Association <https://www.nfpa.org/Public-Education/Teaching-tools/Learn-not-to-burn> Accessed July 28, 2020

Program Name	Audience	Description
English as Second Language (ESL) curriculum and home fire safety for newcomers	Newcomers	Through partnerships with the community groups and learning centres, the BFD presents fire safety information at various times throughout the year. These partnerships are evidence of the City and BFD's commitment to focus on increasing programming for the growing and diverse communities across the entire City and improving community engagement with diverse communities as part of the City's 2018-2022 Plan: From Vision to Focus).
Emergency Services Introduction to New Canadians	Newcomers	Through partnerships the Halton Multi-Cultural Council, the Thomas Merton Centre for Continuing Education, and the Fire Diversity Committee, the BFD presents fire safety information at various times throughout the year. These partnerships are evidence of the City and BFD's commitment to focus on increasing programming for the growing and diverse communities across the entire City and improving community engagement with diverse communities as part of the City's 2018-2022 Plan: From Vision to Focus.

Program Name	Audience	Description
Seniors Program	Seniors Demographic	The PEO is actively involved with community partnerships at both the City and Regional level geared towards supporting seniors. The Older Adult Isolation Action Table is focussed on finding support for isolated seniors. Tea and Talk, in partnership with the Halton Region Police Service organizes safety presentations for seniors. The PEO also collaborates with Recreation Services staff at the City's Senior Centre. These partnerships demonstrate the City and BFD's commitment to focussing on increasing the health and wellbeing of older adults and being recognized as an age friendly community as part of City's 2018-2022 Plan: From Vision to Focus.
Apartment Fire Safety Community Outreach Program	High-rise Tenants	This community outreach program is geared to residents living in Burlington's apartment/condo buildings. This targeted outreach strategy is aimed at educating residents about how to prevent the most common causes of building fires (unattended cooking and careless smoking) and create awareness of the importance of personal escape planning.
Steps to Safety, Home Visit Program	Homeowners	The Steps to Safety, Home Visit Program is focused on making sure the home is properly protected with working smoke and carbon monoxide alarms and ensuring that residents have the right information to prevent and prepare for an emergency. It includes information about how to prevent fires from happening, having a home escape plan in place and being prepared for an emergency. See Section 6.14 for further discussion on this program.

Program Name	Audience	Description
Alarm Assistance Program	Residents over the age of 65 years	This program provides assistance to older adults or persons with a disability who are unable to test or install smoke and carbon monoxide alarms.
Community Outreach	City-wide	Fire prevention and on-duty suppression staff attend community businesses and events to provide fire safety and prevention information and answer any questions the public may have. Some of these events and seasonal activities include the Burlington Home and Lifestyle Show, Emergency Preparedness Week, Children's Festival, Movies in the Park, Alderfest, Fire Prevention Week and Carbon Monoxide Awareness Week.
After the Fire	Residents within the immediate area of an emergency incident	The After the fire program aims to create local awareness of an incident that has occurred and provides timely and relevant fire and life safety education materials. It also aims to address concerns of the residents in an area that has been affected by an emergency incident.
Station Tours	All members of the public	Members of the public can drop by any of Burlington's fire stations for a station tour provided by on-duty firefighters. For larger groups, the station encourages interested groups to book a visit ahead of time.

Through the internal stakeholder engagement process, we learned that in early 2019 the BFD began collecting information about the number of “actual touch points” or interactions with the public at events, rather than the estimated attendance at events. Touch points are more likely to leave a lasting impression with the public and allows for increased recognition of fire safety messaging and improved perception of the BFD. This approach is in keeping with the 2018-2022 Plan: From Vision to Focus, and specifically the focus area of building more citizen engagement whereby residents consistently feel that meaningful engagement occurs. In our view, this approach also provides evidence

of an enhanced understanding of public fire and life safety education targets by the BFD Fire Prevention and Public Education Division personnel.

The BFD has developed a comprehensive public education program that targets a wide range of demographics and opportunities to inform residents and employees of the community on fire and life safety. In our view, this program represents an example of current industry best practices.

Due to the health and safety restrictions imposed by the COVID-19 pandemic, most public education programs and activities are taking place online through the department's website and social media platforms. Some of the training mentioned in this divisional analysis is now being offered virtually.

The single PEO has a full workload with the current responsibilities of the role. Recommendations within this FMP will increase that workload as the department continues to focus on the first two lines of defence. As previously mentioned, the BFD should conduct a workload analysis to understand the current and future workload required to effectively and efficiently meet the needs of the division.

6.14.1 Steps to Safety, Home Visit Program

Under the authority of the FPPA, the Ontario Fire Code (O.Reg. 213/07) requires a working smoke alarm to be installed on each level of a dwelling unit, as well as outside of all sleeping areas. Responsibility for installation and maintenance of the smoke alarm lies with the owner/landlord. To assist the fire department in fulfilling its responsibility for the provision of a smoke alarm program, PFSG 04-40B-03: Smoke Alarm Program outlines the objectives of an effective program. These objectives include all or a combination of the following:

- Providing smoke alarm and home fire escape planning information
- Promoting regular testing and maintenance of smoke alarms
- Providing or replacing smoke alarms and/or batteries
- Encouraging residents to regularly maintain their smoke alarms
- Educating residents about the legal requirements for smoke alarms
- Enforcement of all legislation relating to smoke alarms
- Effectively tracking and evaluating your smoke alarm program
- Modifying the program where necessary to ensure success

Ontario Regulation 194/14: Carbon Monoxide Alarms made under the FPPA came into force on October 15, 2014, introducing new requirements for the installation, testing and maintenance of Carbon Monoxide Alarms (CO Alarms). As a result, fire services within the province have also been tasked with monitoring compliance with this new regulation. Current industry best practices indicate that fire services are revising their previous home smoke alarm programs to include assessing compliance with this new regulation.

The BFD's smoke alarm program "Steps to Safety, Home Visit Program" is described within SOG 1600-014, dated May 15, 2019. This guideline provides a description of what the Steps to Safety Home Visit Program is and the processes included in its delivery.

This program consists of fire suppression crews at all BFD career stations conducting door-to-door visits of homes in their assigned areas based on a risk-based analysis of the previous year's fire history, smoke and carbon monoxide alarm compliance data, building stock information and demographic data. Assigned home visits are assigned to each station area. GIS mapping as well as programming information is made available to crews on fire apparatus tablet home screens. Each crew is responsible for completing 320 home visits annually between June and October. The Steps to Safety Home Visit Program is intended to run from 2019-2023. Crews provide fire safety educational materials and, if requested by the homeowner, will provide information on the testing and maintenance of alarms.

During the first year of the Steps to Safety program, the BFD completed 9,159 surveys, resulting in a total of 1,049 homes voluntarily entered. Of those homes, 594 were compliant with smoke alarm and CO alarm requirements, 478 were not. In 2019, the Steps to Safety program targeted neighbourhoods based on higher rates of smoke and CO alarm non-compliance and or where fire incidents had occurred.

Due to the health restrictions posed by the COVID-19 pandemic, the Steps to Safety program was postponed in 2020 and cancelled for 2021. Review suggests that the 2019 Steps to Safety Program had a positive effect on the number of fire's experienced in the same year, with an overall reduction of close to 20%.

6.14.2 SOG 1600-015: Rural Education Program

SOG 1600-015: Rural Education Program establishes guidelines for suppression crews to provide an enhanced level of public education regarding smoke alarms and prevention of home fires specific to rural areas of the City. Under SOG 1600-015, home visits are to be conducted on weekday evenings and Saturday mornings by Station 7 personnel. Smoke alarms and/or batteries are installed in those homes found without operational smoke alarms. Although the 2016 BFD Community Risk Assessment-Standards of Cover mentions a 2014/2015 enhancement to the Rural Education program, it noted that this SOG does not include reference to carbon monoxide requirements.

6.14.3 SOG 1600-017: Smoke and CO Alarm Home Audits during Response

Smoke and carbon monoxide alarm home audits are also performed by suppression staff to provide an enhanced level of public education and enforcement during emergency response incidents. SOG 1600-017 provides a detailed procedure to be followed by suppression crews while attending an emergency to a residential dwelling unit, including leaving a smoke alarm and carbon monoxide alarm safety pamphlet, alarm testing, expiration checking and issuing a Smoke and Carbon Monoxide Alarm Notice of Violation in instances of non-compliance with the Ontario Fire Code.

The analysis of smoke alarm status following a fire included within the CRA identified two 'key findings' related to smoke alarms that include:

- Over the five-year period from January 1, 2015 to December 31, 2019, of the fire loss incidents in Group C – Residential occupancies, 16.14% of incidents did not have a smoke alarm present (compared to 17.28% in the Province).
- Over the five-year period from January 1, 2015 to December 31, 2019, of the fire loss incidents in Group C – Residential occupancies, 54.72% of incidents had a smoke alarm present and operating compared to 45.20% in the Province.

These 'key findings' highlight the importance of a proactive smoke alarm and carbon monoxide alarm program in the City of Burlington.

6.14.4 Alarm Assistance Program Statistics

The Alarm Assistance Program formerly known as the Supporting our Seniors Program is described in SOG 1600-013 – Alarm Assistance Program, last updated April 2017. This

program provides assistance to all vulnerable demographics who are unable to test or install smoke and carbon monoxide alarms. This program is intended for people with no support network or agencies available to assist. Fire department personnel will test the smoke alarms and CO alarms to make sure they are working and are installed in the proper locations of the home and they will replace them or provide them as needed along with batteries.

Table 14 illustrates the total number of occupancies that were visited between 2017 and 2019. The year 2016 was the transition year between the Support Our Seniors and the Alarm Assistance Programs and 2020 was excluded as the program was affected by the pandemic.

Table 14: Alarm Assistance Program Statistics

Alarm Assistance Program	2017	2018	2019
Initial Assessments	92	57	75
Annual Home Visits	35	111	133
Annual Touch Points	127	168	208

The value of this program is supported by the “identified risks” of the CRA which identify that seniors represent 19.27% of the City’s total population and 13.02% of the population falls into the age range of 55 to 64, representing a cohort aging towards the demographic of 65 years and older.

6.15

Fire Prevention and Public Education Division Summary

The Fire Prevention and Public Education Division’s shift away from tracking attendance to identifying actual touch points is indicative of well trained and passionate fire prevention and public education personnel. In our view, the inspection community-based model located within stations is serving the community well. The division would benefit from continuing its initiative of a Community Risk Reduction Plan as well as a full review of the policies and routine inspection cycle that are currently in place.

Goal #2: The Burlington Fire Department will enhance its fire prevention and public education programs based on the outcomes of a Community Risk Assessment and its’ Community Risk Reduction Strategies. Consideration should be given to increase

resource the division as the community grows, in support of optimizing the first two lines of defence.

Target #2A: Review and update the fire prevention and public education programs and policies in alignment with the community risks reduction strategies and the guidance provided in NFPA 1730.

Recommended Action: That the current inspection cycles approved by Council be reviewed based on a building/risk profile versus an occupancy/building type, and that the review include a comparison to NFPA 1730 as part of a risk reduction strategy. That the Fire Chief report back to council on any recommended enhancements to the existing council approved inspection cycles to support CRRP (**Section 6.1.1**)

Recommended Action: That the BFD review existing policies and establish new policies specific to fire prevention mandatory inspection types and cycles, and to consider including reference to the Establishing and Regulating by-law in the Policy, as approved by council. (**Section 6.4**)

7.0

Training Division

The Training Division provides training of all BFD suppression personnel to support the legislated requirements of the FPPA and the OHSA are being met. Within Ontario, firefighter training is a topic that has come under a high level of scrutiny over the past decade. The results of numerous inquests and investigations have concluded that firefighter training must be considered a priority for municipalities in their role as employer.

The analysis within this section first presents a discussion regarding training standards and the options available for training firefighters in Ontario. This is followed by a discussion of existing division staff resources and related training. The remaining sections include a review of the BFD career firefighter annual training program, technical rescue training programs, online training, company officer training, incident command training, training facilities, and the training program for volunteer firefighters. Where gaps are identified in achieving compliance with industry best practices and legislated requirements, further strategies and recommendations are provided for consideration.

This fire master planning process highlights the relevance of assessing community fire risk as a component of determining the appropriate level of fire protection services to be provided. The information and analysis within this section will present the importance of linking the applicable training requirements with the level of fire protection services provided by the BFD so as to ensure BFD personnel are properly trained to perform their function in a safe and proficient manner.

7.1

Training Standards in Ontario

As referenced previously within this FMP, in 2013, the OFM announced that the Ontario fire service would adopt the National Fire Protection Association Professional Qualifications Standards (NFPA Pro-Qual Standards). Fire Marshal's Communique 2014 – 04 outlined the grandfathering and transition process from the Ontario Firefighters' Curriculum to NFPA Pro-Qual Standards. A 'Grandfathering Policy' was integrated into the transition to the NFPA Pro-Qual Standards process "in order to exempt anyone from

having to start over in any program and in order to give recognition for training and education already completed and for experience already gained”.

In May 2018, the Ministry of Community Safety and Correctional Services (M.C.S.C.S.) (now the Ministry of the Solicitor General) adopted Ontario Regulation 379/18: Firefighter Certification (O.Reg. 379/18), requiring every fire department to certify fire service personnel to NFPA standard applicable to those performing roles involving technical rescue services, communications, fire prevention, public education and training. Based on industry feedback related to its implementation, on October 5, 2018, O. Reg. 379/18 was revoked. It is expected that it will be revised and re-issued.

O. Reg. 379/18 reflected the recommendations of an inquest involving two fatal fires in Whitby and East Gwillimbury. On April 29th, 2016 the verdict of that inquest recommended to the Ministry “to make a Regulation, pursuant to clause 78(1)9k) of the FPPA, requiring mandatory certification and training, to recognized industry standards, for all personnel (as defined in the FPPA) whose primary job function is to perform: 1) fire inspections, 2) public education, and/or 3) communications (call-taking/dispatch)”.

The required training identified within O. Reg. 379/18 are consistent with those included within the NFPA Pro-Qual Standards. As such, fire services across the province are continuing to transition to the use of the NFPA Pro-Qual Standards, recognizing that this is not mandatory, and does not require certification. Use of the NFPA Pro-Qual Standards referenced in **Table 15** remain the current industry best practices in Ontario.

Table 15: Concordance of Ontario and NFPA Standards

Previous Ontario Standard	New NFPA Standard
Ontario Firefighter Curriculum	NFPA 1001 Standard – Level I and Level II
Company Officer Diploma Program	NFPA 1021 Standard – Level II
Fire Prevention Officer Diploma Program	NFPA 1031 Standard – Fire Inspector Level I
Training Officer Diploma Program	NFPA 1041 Standard – Fire Instructor Level II

There are several options available to all fire departments looking to train personnel to these standards, including: the Ontario Fire College and Regional Training Centres; outside or third-party training; in-house training; and, out of province training opportunities, all of which are outlined below.

7.1.1

Ontario Fire College and Regional Training Centres

One option is to enroll personnel in training courses through the Ontario Fire College. The Ontario Fire College is operated by the Office of the Fire Marshal and Emergency Management. While the on-site location of the Ontario fire College campus recently closed, the OFMEM is transitioning and expanding its Regional Training Centre model, which will include virtual/on-line programming. Courses are being scheduled at various Regional Training Centres, or designated certification agencies (designated fire services) across the province. Courses typically run Monday to Friday. This may require overtime, travel costs and backfilling position requirements. As the Regional Training Centre model continues to be built out, (e.g. there isn't a Regional Training Centre in Halton Region yet) it is expected that there will be more flexibility in scheduling and delivering courses to meet fire department needs.

7.1.2

External or Third-Party Training Organizations

The BFD currently makes use of external or third-party subject matter experts to provide training related to a particular NFPA standard, or specific training related to other department activities, such as software. Many departments choose to host training opportunities locally, allowing for greater scheduling flexibility, reducing overtime costs, and eliminating travel and per diem costs that may be applicable when personnel attend courses off-site.

Research indicates that municipalities should consider their due diligence in utilizing external organizations or individuals to provide training. There have been several inquests within the province over the past decade involving external training providers. Recommendations from these inquests have identified the need for provincially regulated training and certification of external organizations.

7.1.3

In-House Training

Some fire departments choose to train and qualify training division personnel to NFPA standards, and then utilizing these staff resources to deliver the training to the department in-house. Curriculum development and the work associated with staying current with the standards is time consuming and staff intensive, requiring a level of expertise that may not be available within a fire department. However, the in-house option does provide opportunity for training to incorporate department specific

considerations (e.g. training bulletins, SOG, community risks) and allows for greater flexibility with respect to scheduling, reducing the need for overtime, backfilling, and eliminating travel and per diem costs that may be applicable when personnel attend training off-site. The BFD makes extensive use of in-house training as part of its regular operations.

Currently, the OFM is approving learning contracts whereby fire services may train personnel using OFM course materials, which provides the benefit of certification ready courses without the cost of course development by the fire service and approval by the OFM

7.1.4 Out of Province Training

Out of province learning opportunities provide an additional training option. While travel and any applicable per diem costs may make this option cost prohibitive, there are some courses that are not yet offered in Ontario that may be beneficial for staff.

7.1.5 Certification of Individual Personnel

The NFPA standards are intended to identify the required training for an individual to attain a recognized qualification related to a specific position's roles and responsibilities within the fire service. It is important for departments to note the distinction between "qualifications" and "certifications". The NFPA training standards and related qualification do not consider or require certification. Certification is completed by third party organizations such as the International Fire Service Accreditation Congress or the Fire Service Professional Qualifications System (Pro-Board) which provide independent evaluation to measure individual performance as set by the standards. In Ontario, the legislation that requires an employer to train its staff is the Occupational Health and Safety Act.

In addition to the legislative requirements, the BFD has a service plan objective to support and encourage all personnel to achieve NFPA certification within their respective roles and responsibilities. This is supported by the Career Paths program focused on firefighter development and succession planning efforts.

Some jurisdictions view the certification process as a method of evaluating and monitoring the effectiveness of internal training, as well as a method of confirming the competency and proficiency of training participants.

In many cases, successful completion to an NFPA standard for the knowledge portion requires a 60% score and the ability to satisfactorily demonstrate skills described in the standard. For certification, the knowledge score requirement is typically 70%, making it a more stringent evaluation of training and skills development. Determining the type of training or standards to be used and whether to qualify or certify staff are all considerations for the fire department.

7.1.6 Certification of Fire Department Curriculum

The fire department may want to consider certifying the curriculum used to train its personnel. In circumstances where certification of fire department curriculum is desired, the curriculum must be approved by the OFM Academic Standards and Evaluation (AS & E) section. Curriculum that has been approved by the AS & E can then be used repeatedly to train firefighters in the same or other jurisdictions within the province. In Ontario, a fire department can contact the OFM to schedule a certification evaluation to a particular NFPA standard. The certification process is then governed by International Fire Service Accreditation Council and Pro-Board, with the OFMEM as the certifying organization in Ontario. The BFD is working with the O.F.M. to do exactly this.

In summary, fire services in Ontario have multiple ways to train and qualify staff, with certification regulated by the Province. It is important to note that while at this point in time neither qualification nor certification are required by legislation, recent inquests involving issues with fire prevention and firefighter training have highlighted the value of qualification and certification as industry best practice.

7.2 Existing Training Division Staff Resources

The existing staff resources within the BFD Training Division includes the Deputy Fire Chief of Operations, Training Supervisor, and two Training Officers (TO). In addition, suppression personnel contribute in developing and coordinating the delivery of the firefighter training programs. This includes full-time firefighters in the role of Platoon Chiefs, Captains, and Shift Training Instructors (SIT).

The Deputy Chief of Operations oversees the delivery of training, providing leadership, direction, and support to the division, while confirming the delivery of training and development meets needs of all BFD.

7.2.1

Training Supervisor (TS)

The Training Supervisor reports to the Deputy Fire Chief of Operations, and is responsible for training activities for all newly recruited, full-time, and volunteer fire suppression staff at the BFD. To carry out the responsibilities of the Training Division, the Training Supervisor is assisted by two Training Officers. It was identified as part of the review that the responsibilities of the TS include:

- Organizing and scheduling of training activities for all training disciplines
- Preparation and distribution of training course materials
- Professional development
- Records management supervision
- Promotional processes and firefighter graduations
- Maintaining and acquiring training equipment
- Checking rescue equipment for defects
- Ordering and distributing new equipment
- Training budget supervision
- Standard operating guidelines and training bulletins

Currently, the TS is engaged in coordinating incident command training, effective command training, training records management, crew and staff interactions and organization, divisional meetings, as well as other special projects (e.g. planning of renovations for the indoor training room). The TS also performs a variety of administrative tasks including, training budget monitoring, formatting presentations, collecting and organizing forms (e.g. Emergency Medical Responder certifications), and organizing firefighter graduations.

7.2.2

Training Officers (TO)

Within the Training Division, there are two full-time Training Officer positions. The TO supports the Training Supervisor with the delivery of training to department staff; responsibilities are divided between the two Training Officers, as illustrated in **Table 16**.

Currently, the Training Officers are focused on delivering the BFD recruit training program for the full-time and volunteer firefighters, fireground operations, coordinating Emergency Medical Responder (EMR) and high-angle rescue training.

Table 16: Training Officer Responsibilities

Training Officer 1	Training Officer 2
<ul style="list-style-type: none"> • Fireground operations • Coordinating specialized disciplines including rope rescue, hazardous materials response, ice water rescue, firefighter survival • Volunteer training nights • Facilities upkeep • Volunteer firefighter recruit training • Defect reports • Division meetings • Professional development • Budget monitoring • Firefighter graduation • Crew/staff/public interactions • Other projects 	<ul style="list-style-type: none"> • Full-time firefighter recruit training • Coordinating specialized disciplines including pump/aerial/driving operations, vehicle rescue, EMR • OFME.M courses and liaison • Training bulletins • New equipment • Defect reports • Ordering educational materials • Division meetings • Professional development • Budget monitoring • Firefighter graduation • Crew/staff/public interactions • Other projects

7.2.3**Platoon Chiefs**

Platoon Chiefs within the BFD are directly responsible for ensuring that all firefighters, including the company officers under their command receive the prescribed training to sustain the skills and competencies commensurate with their individual and departmental roles and responsibilities.

Training programs follow the Annual Training Program, which is accessible to all staff. Platoon Chiefs have the responsibility of monitoring the training of the platoon and adjusting schedules, if required, to ensure the training targets in the Annual Training Program are completed. Further discussion on the Annual Training Program is found in **Section 7.12.1 - Annual Training Program**. As part of their assigned duties, Platoon Chiefs are required to review all training records of staff under their command. The BFD does not currently have an SOG in place that clarifies the role of the Platoon Chief in training records management.

7.2.4

Captains

Captains deliver components of the department's training program. This includes firefighters under their command are familiar with, and well trained on all apparatus, equipment and department guidelines/policies. Captains may provide theory-based training, hands on training, and may also be trained as a Shift Training Instructor (STI).

Captains are also responsible for completing and updating training records for firefighters under their command, into the record management system, as per BFD SOG 300-006 Training and Education Delivery.

7.2.5

Shift Training Instructors (STI)

The use of on-duty fire suppression staff is a cost-effective and operationally efficient means of delivering training in a modern fire department. The use of STI is common in many fire departments in Ontario as a method of delivering on-duty training. This model is beneficial for the professional development of suppression staff, allowing for departmental succession planning, while enabling personnel to share their passion for and knowledge of a specific emergency response scenario. As on-duty firefighters, STI are on the same schedule and platoon that they are training, enabling consistent training to staff.

Within BFD, there are STI (including both full-time and volunteer firefighters) who provide training for the following disciplines:

- Emergency Medical Responder
- Hazardous materials
- High angle rescue
- Water rescue
- Driving
- Pump operations
- Fireground operations
- Firefighter survival

It was identified through the stakeholder consultation undertaken for this FMP that there are variable levels of training amongst STI, with some instructors qualified to NFPA 1041 Level I and others qualified to NFPA 1041 Level II. There are a large number of STI and this creates a significant workload for the Training Division to ensure training and

technical rescue skills are maintained for so many instructors. Further discussion can be found in **Section 7.5 – Technical Rescue Training Program**.

7.3 Existing Training Division Staff Training

The BFD references NFPA Pro-Qual Standards as the foundation for informing the training program. The department utilized the OFM “Grandfathering Policy” to seek qualification for department staff, where applicable. A review of BFD grandfathering documentation identified that some fire department personnel qualified to NFPA 1041 Fire and Emergency Services Instructor, NFPA 1021 Fire Officer, NFPA 1031 Fire Inspector and Plan Examiner, NFPA 1035 Fire and Life Safety Educator, and NFPA 1001 Fire Fighter standards through this process.

Table 17 identifies the differences between the applicable NFPA 1041 Fire and Emergency Services Instructor Levels I, II, and III, including the skills and competencies necessary to successfully achieve the requirements of each level. Each NFPA level is a progression of performance and capability.

Table 17: NFPA 1041 Standard

Training Level	NFPA 1041 Standard
Instructor I	<p>A fire and emergency services instructor who has demonstrated the knowledge and ability to:</p> <ul style="list-style-type: none"> • deliver instruction effectively from a prepared lesson plan, including instructional aids and evaluations instruments • adapt lesson plans to the unique requirements of the students and authority having jurisdiction • organize the learning environment so that learning and safety are maximized • meet the record-keeping requirements of the authority having jurisdiction
Instructor II	<p>A fire and emergency services instructor who, in addition to meeting Instructor Level I qualifications, has demonstrated the knowledge and ability to:</p> <ul style="list-style-type: none"> • develop individual lesson plans for a specific topic including learning targets, instructional aids, and evaluations instruments • schedule training sessions based on overall training plan of authority having jurisdiction • supervise and coordinate the activities of other instructors

Training Level	NFPA 1041 Standard
Instructor III	<p>A fire and emergency services instructor who, in addition to meeting Instructor Level II qualifications, has demonstrated the knowledge and ability to:</p> <ul style="list-style-type: none"> • develop comprehensive training curricula and programs for use by single or multiple organizations, conduct organization needs analysis • design record keeping and scheduling systems • develop training goals and implementation strategies

NFPA industry best practice recommends that a fire and emergency services instructor complete the required training. For example, for an instructor to be qualified to deliver NFPA 1001 Level I training, the instructor should have successfully completed NFPA 1001 Level I and NFPA 1041 Level I training. For a trainer to be qualified to deliver NFPA 1001 Level II training, they will have successfully completed NFPA 1001 Level II and NFPA 1041 Level II training.

It was noted as part of the FMP review that the Training Supervisor and both Training Officers are trained to NFPA 1041 Instructor Level I. In addition, some STIs are trained to NFPA 1041 Instructor Level I, which supports best practices.

7.4 Existing Annual Training Program

It is an industry best practice that an annual training program be developed and delivered for fire department personnel. The annual training program must provide the required training to achieve and sustain the skills and competencies required to safely and proficiently provide the types and levels of service approved by Council through a municipality's Establishing and Regulating By-law.

As previously referenced in this FMP, there is an opportunity to enhance the Establishing and Regulating By-law to provide greater clarity in terms of service levels for BFD. This could include detailed service levels for all specialized technical rescues which would then directly influence a training program. In addition to responding to established training levels, an annual training program also addresses the employer's responsibilities as defined by the Occupational Health and Safety Act, specifically Section 21 Firefighter Guidance Notes.

In addition to responding to relevant standards, curriculum and health and safety requirements, a comprehensive annual training program may include the following core functions:

- Identification of training needs in relation to services provided
- Coordination/scheduling of theoretical and practical training
- Monitoring and evaluation in relation to outcomes achieved
- Ongoing evaluation in relation to industry best practices and legislative requirements
- Oversight of program objectives and records management
- Ongoing assessment of program delivery for efficiency and effectiveness

A best practice for ensuring a department is meeting these requirements is through the formulation and monitoring of an annual training program. The BFD currently utilizes a two-year training plan cycle (currently three-year cycle due to the ongoing COVID-19 pandemic) to monitor and maintain job-related skill proficiency based on the currently approved levels of service.¹⁸ The existing BFD Annual Training Program includes over 100 mandatory course topics for full-time firefighters. These topics and are organized on a week day cycle:

- Fireground Operations (Monday)
- Hazardous Materials (Tuesday)
- Firefighter survival (Wednesday)
- High-angle rescue (Thursday)
- Water rescue training and incident command (Friday)
- Vehicle (Saturday)
- Pump Driver, and aerial operations (Sunday)

Recently, an initiative was undertaken to enhance the organization, delivery, and monitoring of the annual training program for full-time firefighters. A tool was developed that is accessible to all fire department staff and allows individuals to select a training topic. The provided hyperlinks for each topic points to applicable resources such as corporate policy, SOG, training bulletins and applicable IFSTA references. As

¹⁸ Due to the effects of the COVID-19 pandemic, the 2019 to 2020 Training Cycle has been transitioned to a three year cycle.

referenced in **Section 5.0 - Administration Division**, there is an opportunity to review and update the SOG for the department.

There is an opportunity to enhance the current two-year training plan approach by developing a consolidated Comprehensive Training Plan that includes performance goals and targets and outlines both full-time firefighter and volunteer firefighter training (see **Section 7.12 – Volunteer Firefighter Training**).

It is recommended that the BFD develop a policy that references the appropriate professional standards and training, aligned with services levels as defined through the Establishing and Regulating By-law, and to use this to inform a Comprehensive Training Program.

It is recommended that the BFD develop a comprehensive training program that identifies a five year plan for achieving and maintaining the identified training, performance targets, and references an updated training policy, for all full-time and volunteer firefighter positions.

7.5 Technical Rescue Training Program

The Burlington Fire Department provides specialty emergency and rescue services and specialized training. Some of these services include technical rescue, services that require a higher standard of training. Although the frequency of incidents requiring technical rescue is low, the technical and health and safety requirements are high because of the increased risk to the first responders.

The three levels of training as established in NFPA 1670 - Standard on Operations and Training for Technical Search and Rescue Incidents are¹⁹:

1. Awareness Level – reflecting the minimum capability of organizations
2. Operations Level – reflecting the capability of organizations to respond, use equipment, and apply techniques to support and perform a technical rescue

¹⁹ As identified on the NFPA website, it is acknowledged that NFPA 1670 - Standard on Operations and Training for Technical Search and Rescue Incidents is being combined into a new consolidated standard NFPA 2500 - Standards for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Services. The next edition is anticipated for 2022.

3. Technician Level – reflecting the capability of organizations to not only provide the Operational Level services but also to coordinate, perform, and supervise a technical rescue

The following subsections present an overview of existing services and training levels of specialized rescue services provided by the BFD.

7.5.1

Overview of Specialized (Technical) Rescue Service Levels

Sustaining the high degree of training for all firefighters participating in specialized rescue responses to safely and efficiently provide these specialty technical rescue programs, requires substantial training resources. This includes proper training, equipment and opportunities for a range of specialty technical training resources such as hazardous materials response, confined space search and rescue, and rope rescue. Firefighters must be trained, qualified, and available to deliver the specialty programs on a consistent basis, 24 hours a day, 7 days a week, 365 days of the year.

The BFD provides the following specialized rescue services to various levels:

- Hazardous Materials Response
- Confined space
- Search and rescue
- Rope rescue (high angle and low angle)
- Vehicle (auto) extrication
- Water search and rescue (open water and ice)
- Trench rescue
- Structural collapse
- Elevator rescue

In part because resource implications are linked to the identified service levels, it is important that service levels for technical rescues are approved by Council and align with community risk (as explored in the Past Loss and Event History Profile of the Community Risk Assessment). **Table 18** presents the historical call volume for these services as identified in the CRA for the period January 1st, 2016 to December 31st, 2020.

Table 18: Historical Specialized Rescue Incidents (Jan. 1, 2016 to Dec. 31, 2020)

Response Type	Number of Calls	% of Calls
Animal Rescue	10	0.31%
Building Collapse	1	0.03%
Commercial/Industrial Accident	0	0.00%
Confined Space Rescue (non-fire)	1	0.03%
High Angle Rescue (non-fire)	10	0.31%
Home/Residential Accident	12	0.38%
Low Angle Rescue (non-fire)	11	0.34%
Rescue (Other)	40	1.25%
Persons Trapped in Elevator	143	4.47%
Rescue False Alarm	13	0.41%
Rescue No Action Required	92	2.888%
Trench Rescue (non-fire)	0	0.00%
Vehicle Collision	2,782	86.96%
Vehicle Extrication	68	2.13%
Water Ice Rescue	0	0.00%
Water Rescue	16	0.50%

As previously identified in the Administration Division section of this FMP, there is an opportunity to update the City's Establishing and Regulating By-law. This should include clarifying services levels specific to all technical rescues. As part of the data collection completed for this FMP, the specialty rescue training programs and the service levels were identified by BFD are presented in **Table 19**. In our experience, there would be value in investigating calls classified as "other rescue" to identify possible trends within the City's response area.

Fire management decides as part of the training program, to what level an individual firefighter should be trained to. This is different than services provided as part of a Council approved Establishing and Regulating By-law. While ensuring all firefighters are trained to operations level in a variety of disciplines enables the BFD to provide consistent technical rescue response, there would be value in evaluating this approach. Providing this level of training for all suppression personnel requires significant resource commitments by both the suppression and training divisions. This approach also consumes a considerable amount of the time available for other training. A review would consider individual firefighter and fire station's participation in operational level

technical response as well as proficiency demonstrated by specific firefighters. The review should consider past incidents or be conducted on a move forward basis for a specific period of time. It is entirely possible that current service levels could be maintained by designating a core number of firefighters on each platoon who are trained to operations level of a specific specialty rescue, while the remainder of the platoon are trained to awareness level.

Table 19: Specialized Rescue Services Provided by BFD

Program	Training/Service Level
Hazardous Materials Response	Operations
Confined Space Rescue	Awareness
Rope Rescue	Operations
Auto Extrication	Operations
Water Search and Rescue	Operations
Trench Rescue	Awareness
Structural Collapse	Awareness
Elevator Rescue	Not Applicable

The BFD has SOG and training bulletins specific to specialized technical rescue. There is an opportunity to review all SOG and training bulletins to provide consistency in the references to required training. This should include updating all references to the Ontario Firefighter Curriculum to applicable training levels and NFPA standards.

Through the data collection process for this FMP, it was noted that the City has approved the invoicing of non-residents on a cost recovery basis for some technical rescue services. In our experience, it is becoming more common for municipal jurisdictions to consider invoicing fire protection services based on a user fee approach. As part of updating the City's Establishing and Regulating By-law that this should include clarifying the service level specific to all technical rescues.

In the sections that follow, the City's existing technical rescue response levels are discussed in greater detail.

7.5.1.1

Hazardous Materials Response

Despite the City having no history of fixed site chemical releases in the past ten years, the CRA identifies the presence of major provincial transportation routes as potential

risks. These routes include: Highway 407, Highway 403/Queen Elizabeth Way (QEW) and Highway 6, as well as two rail lines: one located south of Highway 403/QEW and the other branches off the east west line through the northeastern corridor of the City. Hazardous materials are commonly transported along these corridors. An incident may require the response of the BFD. However, in these instances the transportation of dangerous goods is regulated by the Transportation of Dangerous Goods Act, 1992. This regulation requires that carriers provide for emergency response capabilities.

Sustaining an operations level of emergency response capability requires a significant amount of financial investment in equipment and training for BFD. For example, each firefighter is currently required to complete five days of training to complete the awareness and operations level training and additional time to complete the required skills and testing process.

Industry best practices support the importance of all firefighters having an awareness level of training for all types of specialized emergency responses, including hazardous materials. This is required to ensure all firefighters are trained to identify the hazards associated with these types of materials and the need for specialized training and equipment. There would be value in considering the number of firefighters trained to operations level as part of the service level in the career path guide and workforce planning review.

7.5.1.2

Confined Space/Trench Rescue

Ontario Regulation 632/05: Confined Spaces defines a confined space as “...a fully or partially enclosed space”. This regulation also sets forth employers’ responsibilities including the provision of on-site rescue procedures. There is currently no legislative requirement for the City to provide either confined space or trench rescue services. In many instances a trench rescue can also be defined as a confined space. The current Establishing and Regulating By-law identifies that Confined Space Rescue and Trench rescue are provided to an awareness level. The by-law references trench rescue resources that can be accessed through other Greater Toronto Area fire departments on a cost recovery basis. A formal agreement to procure these resources has been established. The FPPA outlines that a municipality may enter into an agreement to “provide such fire protection services as may be specified in the agreement to lands or premises that are situated outside the territorial limits of the municipality”. It is a

common practice to negotiate formal agreements with neighbouring municipalities or private contractors for more specialized services.

7.5.1.3 Rope Rescue

Under the authority of the City's Establishing and Regulating By-law 90-2012, the BFD responds to all emergency calls requiring rope rescue including "pick-off" single person rescue or a "basket" rescue where a patient may be injured and requires immobilization. Within the CRA, Mount Nemo Conversation Authority and Bronte Creek are identified as areas where specialty rescue services are experienced. It is suggested that during the next review of By-law 90-2012 that reference to "operations level" be considered.

7.5.1.4 Auto (Vehicle) Extrication

Establishing and Regulating By-law 90-2012 references use of handle, pneumatic and hydraulic rescue tools for auto extrication. As noted in the CRA motor vehicle-related incidents represent 89.09% (2,850) of all rescue responses from 2016 to 2020 for the BFD. Although not all incidents involving motor vehicles require auto extrication, in our experience, operations level training is appropriate for all members of the BFD. Again, it is suggested that during the next review of By-law 90-2012 that the reference to "operations level" be considered.

7.5.1.5 Water Rescue

Water rescue has been the subject of discussion within the fire service because of the 2016 Coroner's inquest into the death of two firefighters during water rescue training exercises. This inquest advised that all ice/cold swift water rescue services training be put in abeyance until the recommendations of the jury were addressed. The findings of the inquest highlighted the need for stringent training requirements for firefighters to facilitate any type of rescue where water or ice is present.

Fire Marshal's Communique 2017-06 encourages municipalities to "review their respective establishing and regulating bylaw in regard to "ice / cold 'swift' water rescue services", if applicable in their jurisdiction."

The BFD has the ability to respond to a variety of water emergencies. Firefighters are trained to perform rescues in open water and on ice, but if a firefighter must enter the

water then they are to be “in contact with the shore by means of a tether line.” It further identifies that if assistance from a vessel is required, resources will be requested from another agency. This is consistent with the recommendations of the 2016 Coroner’s Inquest.

In terms of standard operational guidelines, BFD SOG 1500-001 Water and Ice Rescue has a stated purpose which includes establishing guiding principles for the safe and effective rescue of persons involved in water or ice related incidents. The department should review and update the SOG to be consistent with the Establishing and Regulating By-law 90-2012, as well as industry best practices including applicable NFPA standards, such as NFPA 1006 and 1670.

7.5.1.6 Structural Collapse

The Establishing and Regulating By-law 90-2012, indicates that the BFD trains firefighters the Awareness Level to recognize the hazards associated with a structural collapse. In the event that a rescue or recovery needs to be performed as a result of a structural collapse additional resources can be requested through the Province of Ontario and the Toronto Heavy Urban Search and Rescue Team (HUSAR).

The Province of Ontario has established memorandums of understanding within Ontario municipal jurisdictions across to provide Urban Search and Rescue (USAR) teams qualified to perform rescue to the technician level.

Fire Marshal’s Communique 2020-01 identifies four cities with USAR teams, with Toronto being the closest to the City of Burlington.

7.5.1.7 Elevator Rescue

The analysis presented within the CRA identified that from January 2016 to December 2020, BFD responded to 143 calls for persons trapped in elevators. There is no NFPA standard that identifies the training and competencies required to carry out elevator rescue. There is no level of training recommended for elevator rescues.

7.5.2 High-rise Rescue

The City of Burlington has a number of high-rise buildings and as the planned growth for the City includes intensification, there will be increases in the number of high-rises,

particularly in the downtown and in the designated growth areas. There is a need to match changing community needs with the fire department's skills and resources and to align them with the training requirements.

7.6 Online Training

Access to online training programs can provide greater flexibility in delivering comprehensive training programs. The BFD recognizes the benefit of online training material to support a multitude of schedules, learning styles and improves accessibility to training materials. Currently BFD utilizes Our Training Room which is the corporate e-learning platform and records management system for city employee training records. The e-learning platform enables access to presentation slide decks and PDF files specific to the department as well as mandatory corporate training such as Workplace Hazardous Materials Information System.

The department has utilized several online training programs. This has been in support of the Company Officer Program. In our view, there is an opportunity to expand the use of online training for a range of programs including recruit training, company officer training, and training related to technical rescues.

The department recognizes the benefits of online training and is working with the OFM to become a designated remote testing facility. Currently, a third-party comes on site to conduct testing once online training has been completed. With the designation in place, BFD would be in a better position to expand the use of online training and may help support a Regional Training Centre in the future.

7.7 Company Officer Training

The fire service is a paramilitary organization that references a rank structure to identify the roles and responsibilities of the department and the some of the services it delivers. Company Officers are required to ensure the function of incident command can be implemented at all emergency scenes, and depending on the incident action plan, have sufficient additional officers to facilitate other roles required (e.g., communications, operations) for successful incident command.

Industry best practices reflect that a company officer training program should be ongoing as an element of a broader Officer Development Program. This strategy further supports succession planning and career development for future senior officers.

The standard referenced as best practices for this type of training is NFPA 1021: Standard for Fire Officer Professional Qualifications. The BFD currently trains all company officers to this NFPA standard. BFD SOG 300-006 Training and Education Delivery identifies Officer Development in **Section 7.0** as the responsibility of the Training Division to provide. Consideration should be given to incorporating details of the Company Officer Training Program, including pre-qualifications and skills as well as competency requirements within the proposed Comprehensive Training Program. This should also include consideration to the additional use of online training for all Company Officer training.

7.8 Incident Command Training

Incident command training is considered a core element of company officer training. Ontario Fire Service Section 21 Advisory Committee Fire Fighters Guidance Note #2-1 – Incident Command reflects the importance of incident command in relation to the outcome of emergency scene operations, and the skill development of the Officer so they can serve as an Incident Commander.²⁰ Guidance Note #2-1 describes the first action of employers to train all personnel in incident command, and requires the use of an Incident Command System during all incidents.

Incident Command Systems are an industry best practice designed to positively influence the outcome of an emergency scene operation and the health and safety of firefighters.

Incident command should be established by the first arriving officer and be sustained until the emergency is mitigated. The Incident Commander is responsible for all aspects of managing the emergency incident including developing an “Incident Action Plan” and managing all operations on scene. This includes:

²⁰ Guidance notes to protect the health and safety of firefighters are developed by the Ontario Fire Service Section 21 Advisory Committee and distributed by the Ministry of Labour, Training, and Skills Development.

- Establish immediate priorities, especially the safety of responders, other emergency workers, bystanders, and people involved in the incident
- Stabilize the incident by ensuring life safety and managing resources efficiently and cost effectively
- Determine incident objectives and strategies to achieve the objectives
- Establish and monitor incident organization
- Approve the implementation of the written or oral Incident Action Plan
- Ensure adequate health and safety measures are in place

The Burlington Fire Department responds to a wide range of emergency incidents, and recognizes the importance of incident command. Incident command is closely related to company officer training and succession planning. The first arriving company officer assumes the role of Incident Commander and procedures and standard operating guidelines have been established for the first arriving officer to assume incident command, and ensure tactical priorities are established. The department has a range of guidelines and procedures in place in regard to incident command under SOG series “Incident Command System”.

Incident command training is currently delivered through the company officer training program, and within the annual training program delivered by Shift Training Instructors. Currently there are three different platforms used to deliver incident command training: The Blue Card Command Certification Program (Blue Card), Effective Command Behaviour Marker Framework (Effective Command) and XVR Simulation, and Fire Studio 5. It was identified as part of the review undertaken for this FMP that approximately 50 hours of training through Blue Card is provided as baseline training for a firefighter that is promoted to the position of Acting Company Officer.

The Blue Card program is of one of the most widely utilized programs in the fire service. The program utilizes both on-line and in-class simulation training which focuses primarily on Incident Command training for structural fire responses, however is applicable to all emergency incident responses.

Additionally, a small number of department staff have been trained in the Effective Command model through a “train-the-trainer” approach. It is our understanding that this training program requires on-going maintenance and re-certification training every two years. The Effective Command framework focusses on training, monitoring

performance, assessing decision making behaviours and reviewing and evaluating incident based decision making. This training framework is complemented by simulation programs (see **Figure 7**).

It is noted that none of the SOGs reviewed outline the requirements for successful completion of incident command training. Consideration should be given to incorporating details of incident command training into the Comprehensive Annual Training Program. There may be an opportunity to streamline the programs used as part of the incident command system training. In our view, the BFD has implemented a robust incident command training program, but the department would benefit from a fulsome review of the approach to incident command training to bring alignment between the requirements and the documented SOG, and to ensure it is as efficient and effective as possible.

Figure 7: Simulation Room - Incident Command



7.9 Proposed Joint Training

Through the internal stakeholder consultation process we learned some BFD stations participate in joint training sessions, but that there is a lack of formalized consistent approach to BFD stations training together. Conducting joint training sessions amongst BFD stations provides the opportunity to reduce challenges associated with differences in on-scene operations. Additionally, conducting regular joint training with the City's mutual aid partners would provide the opportunity to ensure interoperability of equipment, communication technology, and staff interaction during mutual aid events.

7.10 Respiratory Protection Program

Section 21 Guidance Note #4-9 Respiratory Protection Program identifies that employers should develop and implement a respiratory protection program and appoint a program administrator. This Guidance Note also references what a respiratory protection program should address such as: program administration, documentation, and evaluation; program administrator training; training of persons administering fit testing; and selection and use of respirators.

BFD strives to meet the intent of the Guidance Note by having SOG and Training Bulletins in place that pertain to respiratory protection. Many findings within this FMP identify the opportunity to introduce enhanced due diligence practices in areas such as records management, training, and comprehensive standard operating guidelines.

7.11 Training Facilities

Training facilities are vital to delivering quality practical training on an ongoing basis, ensuring fire suppression staff have the necessary skills to handle all emergency incidents. The BFD utilizes a variety of training facilities. These include:

- An outdoor training facility
- An indoor training facility
- A dedicated classroom
- An Incident Command simulator room

The dedicated, outdoor training facility opened with Station 1 Headquarters in 1983 (relocated from Elizabeth Street). This facility continues to provide department staff with access to a burn tower and outdoor training grounds, which houses the

department's propane props. The 4 ½ storey burn tower (shown in **Figure 8**) recently underwent significant renovations which included structural repair, maintenance, and additional anchor points added in support of high angle rescue exercises.

As part of the review conducted for this FMP, it was identified that a limitation of the burn tower is that one burn room restricts the number of scenarios that can be undertaken. In addition, with the location to administrative offices, an active fire station, and the mechanics bays, there can be impacts of smoke from Class A fires on these facilities. This requires careful consideration to the timing, weather conditions, and the 'size' of the fire evolutions carried out so as to minimize impacts. In 2020, the decision was made to limit use of the burn tower for live fire training to the months of May-October as burning during the winter is causing structural issues. It is anticipated that this decision will lengthen the lifespan of the burn tower, but the on-going maintenance costs for the facility are becoming prohibitive.

Through the internal stakeholder engagement process it was identified that the Halton Region area municipal fire departments (Town of Milton, Town of Oakville, Town of Halton Hills and the City of Burlington) are exploring the potential for a regional training centre approach to facilities in the region. The BFD should simultaneously continue to investigate the costs of replacing or relocating the existing burn tower. The live fire training component of the training program is difficult to manage if the training facility is out of the respective municipality. This would require taking emergency response resources out of jurisdiction, require backfill and has the potential to generate overtime costs.

Figure 8: Burn Tower at Outdoor Training Facility

The training facilities, which is separate from the burn tower, found within Station 1 includes an indoor training facility, classroom, and incident command simulator. The indoor training facility allows for training scenarios related to firefighter survival and high angle rescue training (see **Figure 9**). There is a plan to repurpose an existing 700 square feet of mezzanine and heating, ventilation and air conditioning (HVAC) space in the facility into an area that will allow for search and rescue and firefighter survival training. Recently, the Training Division received approval to install a door that leads directly outside from the indoor training area to mitigate issues relating to contaminated gear.

The training classroom is large enough to accommodate up to 15 students. It is equipped with a meeting area, kitchenette and built-in audio-visual capabilities that are

currently being updated. It was confirmed through the internal stakeholder consultation process for this FMP that the classroom is currently meeting the needs of the BFD.

The command simulator room was originally constructed to train junior and senior officers and to facilitate the BFD promotional system. The room is currently being used to deliver a hybrid delivery model for BFD personnel and is equipped with small desks and audio-visual equipment for incident command (see **Section 7.8 – Incident Command Training**).

It is recommended that the BFD further investigate the potential for participating in a regional training centre or the replacement/relocation of the existing facility, within the city's budget process, as required.

Figure 9: Indoor Training Facility at Station 1



7.11.1

Live Fire Training

The purpose of live fire training is to provide realistic fire simulations under controlled conditions. Live fire training ensures that all suppression staff have sufficient exposure to the conditions that a firefighter may encounter during a fire incident, including simulated heat, humidity, restricted vision, and smoke conditions. This type of training also enhances the understanding of fire behaviour and smoke conditions in certain environments as they may relate to conditions such as “flashover”.

Recognizing the importance of live fire training, the BFD annual training program for full-time firefighters incorporates three live fire sessions for each crew simulating fires in a single-family dwelling and high-rise occupancies. Volunteer firefighters also participate in live fire sessions annually, which simulate fireground operations, including tanker shuttle training as well as live fire training at the training tower at Station 1.

NFPA 1403: Standard on Live Fire Training Evolutions is referenced for live fire training exercises for suppression personnel. NFPA 1041 Level II is the recommended training standard for those who will be performing the roles of Live Fire Instructor and Live Fire Instructor in Charge. Based on our review of the training within the BFD, the Fire Chief, one of the Deputy Fire Chiefs and Training Supervisor are the only individuals who currently have this level of training. In our view, this training should be made available to additional BFD personnel and could be incorporated into the career development path of appropriate personnel.

The importance of firefighter health and safety during live-fire simulations is emphasized in BFD SOG 300-001 – Safety in Training. This SOG in part outlines responsibilities for live fire training. There is an opportunity to update the SOG with consideration to referencing the training required to carry out these evolutions.

Through the internal stakeholder consultation process, it was confirmed that at the time of this report, the BFD has seven acquired structures at its disposal for training purposes. The approval process prior to using an acquired structure for live training evolutions is set out in SOG 300-002 and includes the completion of an Acquired Structure Information Form and waiver form signed by the property owner.

7.12 Volunteer Firefighter Training

Training requirements are the same for both volunteer and full-time firefighters. The City's legislated responsibilities as an employer are also the same for all fire department personnel. This section focuses on the BFD volunteer firefighter training program, beginning with volunteer firefighter recruitment and retention. This is followed by an overview of the volunteer firefighter annual training program, recruit training, company officer training, live fire training, and incident command training.

7.12.1 Annual Training Program

The Training Division provides the training program to the volunteer firefighters. Similar to the training plan for full-time firefighters, the volunteer training plan is a two-year program with 50 mandatory training topics. Volunteer firefighter training is organized on weekly cycle (Wednesday nights).

Similar to the full-time firefighter annual training program, the annual volunteer training program includes a schedule, training materials and resources. Due to the variation in the roles of the volunteer complements at Station 1 as compared to Station 5 described in **Section 8.1**, there is some variation between the training programs for each station. For example, the program for Station 5 includes training on the use of a tanker shuttle accreditation, while hazardous materials response training is provided for Station 1. Currently training is facilitated by the Training Division and delivered to volunteer firefighters primarily through the use of volunteer firefighter instructors utilizing the Shift Training Instructor model.

7.12.2 Volunteer Recruit Training

The Training Division runs two recruit programs a year, one for full-time firefighters and one for volunteer firefighters. BFD SOG 1400-008 Volunteer Hiring Process outlines the recruit program and hiring requirements. The recruit program includes a physical abilities test, and an interview with a volunteer Captain, Deputy Fire Chief and representative from the Training Division. As identified in the SOG, candidates are ranked and notified, should they be selected to enter the recruit training program.

The volunteer firefighter recruit training process occurs over a four-month period on Wednesday evenings and Saturdays. Per BFD SOG 1400-008 Volunteer Hiring Process,

each recruit must complete the 16-week program and score a minimum of 70% overall to be successful in the recruit process.

The Covid-19 pandemic and related restrictions have been affecting the ability to recruit. It was identified as part of stakeholder engagement that a recruit class for volunteers is restricted in the number of recruits. Historically, the number of permitted recruits has been sufficient to address retirements or staff turnover. However, this has impacted the ability of the BFD to increase the number of volunteer firefighters to meet the full, council-approved complement of 35 firefighters at Station 1 and 30 firefighters at Station 5. At the time of writing, Station 5 currently has an available complement of 14 firefighters and this has resulted in staffing turnout challenges, particularly during the daytime on weekdays.

BFD SOG 1400-008 Volunteer Hiring Process identifies that a volunteer firefighter whom has successfully completed the recruit training program is subject to a 12-month probationary period prior to being considered an internal candidate in a career recruitment process. As part of the stakeholder engagement conducted for this FMP, it was identified that the department may benefit from formalizing the career path of volunteer to full-time firefighter within the BFD.

BFD SOG 1400-008 Volunteer Hiring Process specifies recruits will not respond to emergency incidents until the recruit program has been completed. However, the department does not appear to have any policies or guidelines that address restricted duties for recruit level firefighters in the absence of applicable training such as NFPA 1001 Firefighter Level I and Level II. While the recruit training program includes training to the NFPA 1001 standard and other specialized rescue training, it was identified as part of this review that of 45 listed volunteer firefighters, only approximately half are trained to NFPA 1001 Firefighter Level II. Training and third-party testing is being considered to address this gap. On average, it takes 12-14 weeks to train a recruit NFPA 1001 Level II. Recognizing the time required to have fully qualified recruits, the department would benefit from having a policy that outlines restricted duties for recruit firefighters, which is in keeping with the preceptorship program recommended in the BFD Volunteer Firefighters Review Committee February 2000 Final Report.

It was noted through the internal stakeholder consultation process for this FMP, that at one time, recruits were trained to NFPA 1035: Standard on Fire and Life Safety Educator,

Public Information Officer and NFPA 1031: Standard for Professional Qualifications for Fire Inspector and Plan Examiner, but that more recently, this has not been included as part of the recruit training program due to time constraints. There would be value in integrating volunteer firefighter training into their career path discussions. It provides the opportunity for a fire department to utilize suppression personnel to perform in-service fire safety audits and assist with public education opportunities. This type of training may also augment succession planning efforts by the fire prevention and public education division. In our experience, volunteer firefighters are often enthusiastic to be offered this type of training, which may augment other efforts by the City to recruit and retain volunteer firefighters.

7.12.3 Volunteer Officer Training

Departmental Policy 06 – Volunteer Promotional Policy outlines the promotional procedure for volunteer firefighters. It identifies officer roles per station being:

- 1 Captain,
- 2 Assistant Captains,
- 6 Lieutenants at Station 1, and 8 Lieutenants at Station 5
- 2 Acting Lieutenants.

Per the policy, the experience required to take on these roles is based on years of experience as identified in **Table 20**. Two years as Lieutenant or equivalent experience is required to be promoted to Volunteer Station Captain. It is noted that the policy does not reference applicable NFPA 1021 Company Officer training or requirements related to training for incident command. The policy references a verbal, written, and practical examination.

Table 20: Experience Requirements for Volunteer Officers

Position	Years Firefighter Experience
Acting Lieutenant	6
Lieutenants	8
Assistant Captain	2 Years as Lieutenant (or equivalent)
Captain	2 Years as Lieutenant (or equivalent)

It was identified through stakeholder engagement that due to the evolutions of volunteer firefighter retention, the resources available to meet the experience

requirements are challenged. It is recommended that the BFD review and update the Volunteer Promotional Policy, as part of a comprehensive volunteer firefighter review of (see **Section 5.11**), and to ensure that the requirements reflect best practices, including consideration to the years of experience required and defined training.

7.12.4 Volunteer Firefighter Training Summary

Over the life of the BFD, there has been an ongoing evolution of the role and demands on volunteer firefighters in the context of modern society and modern fire departments. Training requirements have impacted the demands on volunteer firefighters as individuals and on department training divisions. Recruitment challenges are also common in Ontario and across Canada, to which the BFD is not immune.

7.13 Training Division Staff Resource Strategy

The BFD training program should align with established service levels and the applicable leading practices. This is applicable for all areas of the department including fire prevention, training, mechanical/maintenance, communications, and both volunteer and full-time firefighters. Throughout this FMP, discussion and recommendations are presented for the specific training recommended for each division of the BFD. An increased demand for training exists for all BFD personnel.

The implementation of a department wide workload management process, including for the training division, would be beneficial to assessing the staff resources required and implementation time frame to achieve the proposed training requirements to meet the City's legislative and operational requirements.

The use of Shift Training Instructors (STI) should continue and BFD will need to review and formalize these roles and responsibilities, reporting structure, and training requirements for the delivery of training to both full-time and volunteer personnel.

With the anticipated growth in development within the municipality and if the staffing recommendations of this report are approved by council, there will be an increased number of fire suppression personnel, which will further increase the need for training.

Workload analysis, management, and reporting must be regularly evaluated to determine if/when additional resources are required within the training division.

7.14

Training Division Summary and Recommendations

The analysis presented within this MFP confirms the BFD benefited from participating in the OFM “Grandfathering Policy” that recognizes the skills and competencies that the existing staff had garnered through years of training and experience. Transitioning to the utilization of the NFPA Pro-Qual training standards is an industry best practice and will continue to place a high demand on the existing level of staff resources within the Training Division.

Volunteer firefighters are a valuable resource to the City and the BFD and their sustainability is an important consideration in this FMP.

As a result of the review of the Training Division, the following goals, targets, and recommended actions are presented for Council’s consideration and approval:

7.14.1

Goals, Targets, and Recommendations

Goal #3: BFD will maintain a training program that supports all functions of the organization and at the appropriate levels based on the services provided as defined in the Establishing and Regulating By-law.

Target #3A: Follow industry best practices regarding training for all department staff and rank structure.

Recommended Action: That the BFD develop a policy that references the appropriate professional standards and training, aligned with services levels as defined through the Establishing and Regulating By-law, and to use this to inform a Comprehensive Training Program. **(Section 7.4)**

Recommended Action: That the BFD develop a comprehensive training program that identifies a five year plan for achieving and maintaining the identified training, performance targets, and references an updated training policy, for all full-time and volunteer firefighter positions. **(Section 7.4)**

Target #3B: Ensure that there are appropriate training facilities and equipment available to support the defined training needs.

Recommended Action: That the BFD further investigate the potential for participating in a regional training centre or the replacement/relocation of the existing facility, within the City's budget process, as required.

(Section 7.11)

Operations Division

To comply with the Fire Protection and Prevention Act, 1997 the City of Burlington is required to “provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances”²¹ which includes making an informed decision regarding the level of fire suppression services to be provided.

O. Reg. 378/18: Community Risk Assessments was developed to assist Council in this decision making process and specifically requires that Council “use its community risk assessment to inform decisions about the provision of fire protection services”²² including the level of fire suppression services to be provided.

The delivery of fire suppression services is recognized by the OFM as the Third Line of Defence. This model also recognizes that “due to a variety of influences, not all communities are capable of, or should consider delivering the same level of service”²³. To assist Council in this decision making process the methodology presented within this section considers the ‘identified risks’ and ‘key findings’ identified by the companion Community Risk Assessment.

Reference is also made to the Public Fire Safety Guidelines (PFSGs) authored by the OFM and current industry best practices as presented within the applicable NFPA standards. The analysis within this section has also considered the 2016 Standards of Cover.

²¹ Fire Protection and Prevention Act, 1997, Part II Responsibility for Fire Protection Services, Municipal Responsibilities, Section 2. (1) (b)

²² Ontario Regulation 378/18 Community Risk Assessments, Mandatory Use, Part 1 (B)

²³ Office of the Fire Marshal and Emergency Management, Public Fire Safety Guideline 04-01-12 Selecting Fire Suppression Capability

8.1

Existing Fire Suppression Deployment Model

Table 21 illustrates the current distribution of apparatus and deployment at each of the eight existing fire stations. The existing BFD fire suppression deployment model includes sustaining a minimum of 35 full-time firefighters on duty at all times with a total complement of 172 full-time firefighters. These firefighters are deployed from the City's seven urban fire stations that are strategically located across the City.

All urban stations are staffed with an on-duty minimum of four full-time firefighters, which is consistent with best practices (see **Section 8.4.2**). In addition, Stations 1, 4, and 7 are staffed with an additional crew of two full-time firefighters as part of the minimum staffing. These crews staff a rescue, aerial (ladder), and a rescue, in each station respectively.

Station 1 is a composite fire station that has a complement of full-time firefighters and a total approved complement of 35 volunteer firefighters. Station 5 is a volunteer fire station located in the rural community of Kilbride, in the northern part of the City of Burlington, with an approved complement of 30 volunteer firefighters.

Table 21: Existing BFD Fire Suppression Deployment Model

Fire Station	Apparatus	Minimum Full-Time Firefighter Deployment	Volunteer Firefighter Deployment (80% of the Time)
1	Pump 311	4	0
1	Rescue 312	2	0
1	Pump 301	0	4
1	Support Unit 301	0	2
1	Car 30	1	0
2	Pump 321	4	0
3	Quint 331	4	0
4	Pump 341	4	0
4	Ladder 342	2	0
5	Pump 305	0	4
5	Tanker 305	0	2
5	Support Unit 305	0	2

Fire Station	Apparatus	Minimum Full-Time Firefighter Deployment	Volunteer Firefighter Deployment (80% of the Time)
6	Pump 361	4	0
7	Pump 371	4	0
7	Rescue 372	2	0
8	Quint 381	4	0

8.1.1

Full-time Firefighters

Burlington utilizes a four platoon system to schedule the required number of full-time firefighters to be on duty at all times. The four platoon system divides the total number of firefighters employed by the City ideally into four equally staffed platoons. When on duty, the number of firefighters assigned to each platoon are then dispersed by station assignment and apparatus to provide the required per apparatus staffing.

Historically, municipalities have considered a ratio of 1.25 firefighters to help maintain the staffing required. For example, a pumper or front-line apparatus that requires a staffing of four firefighters requires a platoon complement of five firefighters, and a total department complement of twenty firefighters. The application of this 1.25 ratio acknowledges the need for the availability of additional firefighters to accommodate vacation, sick time, Workplace Safety and Insurance Board (WSIB) or other approved absence. The BFD staffing by apparatus is outlined within the collective agreement.

It is recommended that when municipalities are hiring full-time firefighters to staff new stations or placing additional apparatus in service the 1.25 ratio should be applied based on the type of apparatus being put in service. As indicated above, to fully staff primary apparatus requiring a staffing of four firefighters, this means hiring a total complement of twenty full-time firefighters. For apparatus requiring a staffing of two firefighters on duty at all times this means hiring a total complement of twelve full-time firefighters (i.e. three per shift). If at some point in the future staffing on the apparatus increase to four, only eight more firefighters are required (i.e. $12 + 8 = 20$).

The 1.25 ratio has been a past practice of Burlington Fire Department. Station 8 was the first fire station that was not staffed using this ratio. Currently there are only 12 of the 20 firefighters required to staff this station, which negatively impacts the department's ability to meet minimum staffing as outlined in the collective agreement.

As noted earlier in this report, all primary response apparatus are staffed with a minimum of four firefighters per shift. This is currently a shortfall of eight firefighters (based on the 1.25 ratio) and should be considered an immediate staffing need to support minimum emergency response staffing levels across the City.

The sustainability of this historical full-time firefighter staffing ratio model has been dramatically impacted by changes within the fire service in Ontario. These changes include the following:

- In 2007, the Workplace Safety and Insurance Act was amended to create a statutory presumption for firefighters and fire investigators to get compensation for heart injuries and certain cancers without having to prove they are work-related. This regulation was amended in 2014 to add six additional cancers to the list of diseases that are work-related: multiple myeloma, testicular, breast, prostate, lung, and skin cancer;
- The transition to the use of 24-hour shift schedule system over the past decade for the assignment of full-time firefighters replacing the previous 10-hour day/14-hour night shift system;
- Acknowledgment of the aging work force of municipal fire departments whereby the vacation allotment for firefighters is based on seniority.

The historical 1.25 ratio for hiring full-time firefighters was not designed to accommodate this type of presumptive legislation and the other changes. Most fire services in Ontario including those operated by volunteer and full-time firefighters are being impacted by this legislation.

To help understand why this additional staff is required consider the following:

- Four additional firefighters for 52 weeks a year provides 52 person-weeks of additional capacity.
- Four firefighters each having on average six weeks of vacation time uses 24 of those 52 person weeks.
- If sick time, for example, averages five sick days per year/person (one week) for four firefighters that is another five weeks of time.
- This is further complicated by the 24 hour shift. Under a shift arrangement where there are 10 and 14 hour shifts, if a firefighter is ill or needs to be off for a shift, that shift is now 24 hours, so more potential time to cover for the absence.

- This totals 28 weeks of the 52 available to cover vacation and sick time.
- There are a number of other reasons firefighters may require a leave of absence from work (e.g. long-term disability, parental leave, compassionate care leave, presumptive illness, off-site training), that also needs to be covered by the remaining additional capacity, which is 24 person weeks.
- Experience has shown that the additional fifth firefighter to keep one on duty across the four shifts is a leading practice (factor 1.25).

For Burlington with a minimum staffing of 35 per shift (seven apparatus staffed. with four firefighters and three staffed with two firefighters, plus the Platoon Chief), this results in 140 firefighters across the four shifts. Applying the staffing ratios of 1.25 results in a total career suppression staffing requirement of 180 firefighters. Burlington current complement is 172 firefighters. This puts current staffing eight short of the recommended requirements.

It is recommended that the total existing career suppression complement be increased by eight from 172 to 180 firefighters, as an immediate priority.

When minimum staffing on a shift cannot be met from the platoon on-shift, off-duty firefighters are called in on overtime, contributing to overtime costs. If sufficient off-duty firefighters are not available to achieve the minimum staffing, a front line apparatus is taken out of service. This has an impact on the level of service being provided.

8.1.2 Volunteer Firefighters

Station 1

Station 1 has an approved complement of 35 volunteer firefighters, with 32 currently on staff. The roles and responsibilities of the volunteer firefighters at Station 1 are in part informed by the existing deployment protocols and the result of a review of the role and reorganization of the volunteer firefighters in the urban area, completed in 2000. The Station 1 volunteers' function in a support role in the event of a structure fire or other incident requiring their support. The role of the volunteer firefighters is also influenced by the deployment protocols whereby it is at the discretion of the Platoon Chief on duty as to when and if the volunteer firefighters are deployed. There are possible advantages

to exploring how else the Station 1 volunteer firefighters can support the deployment model of the BFD.

Station 5

Station 5 is located in the rural community of Kilbride and has an approved complement of 30 volunteer firefighters. The volunteer firefighter suppression resources at Station 5 play an important role in initial response for the rural area. Volunteer firefighters' turnout numbers and turnout times are uncertain and depend on the size of the current complement, and the location/availability of the firefighters at the time of an emergency incident. They need to be available when a response is required and they need to travel to the station first to acquire their gear and respond on an apparatus together with other firefighters. This is complicated during the weekday, daytime hours when volunteer firefighters may be working out of the community and unable to respond.

In the rural area, all calls for assistance includes an emergency response by full-time firefighters that are automatically and simultaneously dispatched from urban area Stations 2 and 7 (12.5 km from Station 2 and 14.3 km from Station 7).

While Station 5 has a total approved complement of 30 volunteer firefighters, at the time of writing this report, the number of volunteer firefighters was approximately 50% of the approved complement. A recruiting process is underway to increase the complement.

Experience has shown that greater numbers of firefighters can assist with both a quicker turnout time and a turnout of more firefighters on any given call. This is particularly important when there is a need to staff the two front line apparatus from the station.

The BFD will continue to regularly recruit to achieve the approved volunteer firefighter complement.

The Administration Division review in this report discusses some of the challenges related to recruitment and retention as well as level of experience of volunteer firefighters in the BFD. Some of the career firefighter hiring has occurred from among the volunteer firefighters, which is an advantage for the BFD, but also challenges maintaining the approved volunteer complement.

8.2

Existing Fire Stations

The Burlington Fire Department operates out of eight stations across the City. Seven of the stations are distributed across the urban area of the City, with headquarters located at Station 1. Station 5 is located in the rural area, in the community of Kilbride. The following provides an overview of the existing stations.

Fire Station 1

Fire Station 1 is a two-storey building, located at 1255 Fairview Street. A renovation was completed in 2016 as the result of a space analysis to accommodate management and administrative staff. The second floor is accessible by elevator and has multiple accessible washrooms. Offices for the Fire Chief, management staff, administration staff, fire prevention officers, and public education are located on the first and second floor. There are meeting spaces including a large boardroom with kitchenette for training on the first floor, and a boardroom and smaller meeting space on the second floor. Fire Station 1 is the only BFD station with full-time and volunteer fire suppression staff.

Fire suppression staff living quarters include a kitchen, living room, and dormitories outfitted with murphy beds. Separate male and female washrooms/changing room combinations exit to the internal building and apparatus floor. Additional rooms include an IT room, mail/records management room, and a quartermaster's room.

The four bay station (three are drive-thru) is outfitted with a direct connect system to control diesel emissions. There are multiple rooms off the apparatus bay for the storage of current bunker gear, and a decontamination room to with an extractor and closet dryer.

A separate building is located behind Station 1 for apparatus maintenance, municipal snow plow maintenance, and facilities maintenance. The building is outfitted with an office, truck lift, truck pit, and storage space for parts and tools.

Station 1 has a large burn tower and other training props including a car fire propane prop, forced entry prop, and fire extinguisher training props. There is a large indoor wooden prop to simulate a residential dwelling to train for fireground critical tasks, and rescues. There is also a simulation room with the ability to run Blue Card Command

certification scenarios for incident command and support training. The training area outside Station 1 is where the community events and demonstrations take place.

Fire Station 2

Fire Station 2 is a one-storey building, located at 2300 Upper Middle Road. Station 2 and Station 6 were built in the same time period, and are very similar in design. There are offices for captains and fire prevention, living quarters for fire suppression personnel including a kitchen, living room, shared washrooms for male and female staff, and dormitories. There is mechanical room for the testing and maintenance of self-contained breathing apparatus (SCBA). There is also an SCBA refill station, and a gas equipment calibration area within the apparatus bays. The two-bay station has ventilated bunker gear storage rooms off the apparatus bays, and washer/extractors for cleaning contaminated gear. There is sufficient parking outside the station for staff and visitors.

Fire Station 3

Fire Station 3 is a two-storey building, located at 1044 Waterdown Road. It is a two-bay station that was constructed in 1959. Part of the station is being leased to St. John Ambulance. There are offices for both captains and fire prevention, and living quarters for staff which including a kitchen, living room, separate male and female washrooms, and dormitories. Bunker gear is stored in ventilated storage rooms off the off the apparatus bays. This is one of the oldest stations and is nearing the end of its lifecycle, requiring replacement.

Fire Station 4

Fire Station 4 is a one storey station, located at 711 Appleby Line. The two-bay station was originally built in 1969, and is an older station nearing the end of its lifecycle and soon requiring replacement. There are two offices for captains, and additional offices for use by other staff. Living quarters include a kitchen, living area, dormitories with murphy beds, and both male and female washrooms.

The apparatus bays are outfitted with direct connect system to control diesel emissions. Firefighter bunker gear is stored in unventilated rooms off the apparatus bays. The main stock room for the BFD is located at Station 4, and supplies are distributed to other

stations as required. There is sufficient parking outside the station for staff and visitors. This station previously housed the communications centre.

Fire Station 5

Fire Station 5 is a one-storey building, located in rural Burlington at 2241 Kilbride Street. The three-bay station was constructed in 1977, and is a volunteer station. The station operates on a well and septic system. There is an office space with multiple desks, a meeting room, and shared washrooms for male and female staff. There is no dormitory or exercise room. Bunker gear is stored in an unventilated room off the apparatus bays. Station 5 is used as a community centre for surrounding residents during severe storms and power outages. There is sufficient parking outside the station for staff and visitors.

Fire Station 6

Fire Station 6 is a one-storey building, located at 455 Cumberland Avenue. There are offices for captains and fire prevention, living quarters for fire suppression personnel including a kitchen, living room, dormitories, and shared washrooms for male and female staff. The two bay station is outfitted with direct connect systems to control diesel emissions, and bunker gear is stored in dedicated rooms off the apparatus bays.

Fire Station 7

Fire Station 7 is a one-storey building, located at 4100 Dundas Street. The two-bay (one drive-thru) station was built in 2000. There is a captain's office, and an extra office used by the police department. There is a meeting room with kitchenette, kitchen, dormitories, and living area. All hose testing and maintenance is completed at Station 7 in the apparatus bays. Bunker gear is stored in ventilated rooms off the apparatus bays. There is a laundry room with a washer/extractor and dryer located in a separate room off the bay floor.

Fire Station 8

Fire Station 8 is a one-storey station located at 1837 Ironstone Drive. The two-bay (one drive-thru) station is a Leadership in Energy and Environmental Design (LEED) gold certified building, constructed in 2011. Station 8 has offices for captain and fire prevention, a kitchen, living area, dormitories, computer room, and both male and female washrooms.

The apparatus bays are outfitted with a direct connect system to control diesel emissions. There are rooms off the apparatus bays for the storage and decontamination of bunker gear. Bunker gear is stored in ventilated rooms, and the decontamination room is outfitted with an extractor and closet dryer.

8.3 Total Response Time Components

Within the fire service, **“Total Response Time”** is calculated by assessing three primary factors that include the following:

$$\text{Dispatch Time} + \text{Turnout Time} + \text{Travel Time} = \text{Total Response Time}$$

Each component plays an important role in overall response time. Improvements to any one component is an opportunity to improve overall response time. This section provides an overview of each of the components.

Generally, emergency response times are measured and analyzed according to percentile ranking (i.e. percentage of responses meeting a specified timeframe). The 90th percentile (i.e. where 90% or 90 out of 100 responses meet a specific response time target) is a common industry best practice for reporting and understanding emergency first responder performance. Fire and emergency services commonly measure and report 90th or 80th percentile response time data for system planning and resource deployment purposes.

8.3.1 Dispatch Time

The **NFPA 1710 - Standard for Organization and Deployment of Fire Suppression Operations by Career Fire Departments (2020)** defines alarm processing time (dispatch time) as “The time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to emergency response facilities (ERFs) and emergency response units (ERUs).”

NFPA 1710 standard requires that “the fire department shall establish a performance target of having an alarm processing time of not more than 64 seconds for at least 90%

of the alarms and not more than 106 seconds for at least 95% of the alarms processed, as specified by NFPA 1221”.²⁴

8.3.2

Turnout Time

Turnout time is defined within the by the **NFPA 1710 - Standard for Organization and Deployment of Fire Suppression Operations by Career Fire Departments (2020)** as:

“The time interval that begins when the emergency response facilities (ERFs) and emergency response unit (ERUs) notification process begins by either an audible alarm or visual annunciation of both and ends at the beginning point of travel time.”²⁵

In a composite fire department such as the BFD that utilizes volunteer firefighters, turnout time is a critical component of assessing the overall emergency response capabilities of the department. In comparison to full-time firefighters who are assigned to a specific fire station, are on duty at the fire station and ready to respond, the volunteer firefighters must first be alerted to respond, then travel in their own vehicle to the fire station, and then prepare to respond. Within the fire service the impact of turnout time is one of the most significant operational differences between the use of full-time and volunteer firefighters.

The NFPA 1710 Standard identifies a performance target of 80 seconds or less for all fire-related incidents and 60 seconds or less for medical/resuscitator calls. The general industry definition of firefighter turnout time is defined as the preparation time required between the emergency call being received at the fire station and the time the truck and firefighters leave the station.

²⁴ It should be noted that NFPA 1221 (2019) Section 7.4.3 identifies that emergency alarm processing for the highest prioritization level of calls shall be completed within 60 seconds 90 percent of the time. This is different than the performance target referenced in NFPA 1710 (2020) of 64 seconds 90 percent of the time. For the purposes of this Fire Master Plan, we have applied the performance target referenced in the most recent NFPA document which is the 2020 edition of NFPA 1710.

²⁵ NFPA 1710 Standard for Organization and Deployment of Fire Suppression Operations by Career Fire Departments – Section 3.3.53.8

8.3.3

Travel Time

Travel time is defined within the by the **NFPA 1710 Standard for Organization and Deployment of Fire Suppression Operations by Career Fire Departments** as:

“The time interval that begins when a unit is on route to the emergency incident and ends when the unit arrives at the scene.”²⁶

Analyses of the components of total response time for BFD can be found throughout **Section 8.0 Operations Division**.

8.4

Fire Suppression Guidelines and Standards

Within Ontario, there is no specific legislated standard that a community must achieve with regard to the type of firefighter (e.g. full-time, part-time or volunteer), number of firefighters, number of fire stations or the level of fire suppression services that must be provided. As referenced in the previous section of this plan the FPPA requires that establishing the level of fire suppression services within the municipality is the role of the municipal Council.

Over the past decade there has been a transition within the fire service industry across North America to the utilization of community risk-based analysis. Community risk-based analysis is used to determine the appropriate level of firefighter deployment based on the critical tasks to be performed to effectively, efficiently and safely conduct fire suppression operations.

To assist municipal councils in this decision making process the FPPA assigns powers to the Office of the Fire Marshal and Emergency Management (OFMEM) that include responsibilities “to issue guidelines to municipalities respecting fire protection services and related matters”. The OFMEM complies with this requirement through the issuance of Public Fire Safety Guidelines (PFSG), Fire Marshal’s Directives, Technical Guidelines, Communiques and other forms of communication. At this time all PFSG are under review but have been authorized by the OFMEM for continued use for reference

²⁶ NFPA 1710 Standard for Organization and Deployment of Fire Suppression Operations by Career Fire Departments – Section 3.3.53.7

purposes. Where applicable PFSGs have been utilized within this FMP to inform the analysis and to provide supporting reference documents.

8.4.1

PFSG 04-08-10 Operational Planning: An Official Guide to Matching Resource Deployment and Risk

PFSG 04-08-10 - Operational Planning: An Official Guide to Matching Resource Deployment and Risk was released by the OFMEM in January 2011 and includes a Critical Task Matrix (CTM) to assist municipalities in determining the level of fireground staffing capabilities based upon low, moderate, high and extreme risks. The CTM is defined by the OFMEM as “The Critical Task Matrix is based on the Incident Management System (IMS). It will assist in identifying fireground staffing capabilities based upon low, moderate, high and extreme risk levels within your community. The Office of the Fire Marshal (OFM) has identified the critical tasks from the Incident Management System that are used during fireground operations. These tasks are consistent with applicable legislation, industry best practices and the Ontario Fire College Curriculum.”²⁷

The CTM further recognizes that within the IMS that:

- Upon arrival and rapid size-up, the incident commander can upgrade or downgrade response
- Crews can be reassigned to other tasks once original assignments are complete
- Response protocols can be established with specific risk levels used to assist with pre-planning to obtain more resources based on the escalating nature of the emergency
- Fire departments perform rescue and building personnel conduct evacuations according to their approved fire safety plans
- Some tasks will never be assigned based on the tactical approach chosen by the incident commander (e.g. offensive versus defensive)

²⁷ “Operational Planning: An Official Guide to Matching Resource Deployment and Risk Workbook,” Ministry of the Solicitor General Website, Last Modified: May 5, 2017, <http://www.mcscs.jus.gov.on.ca/english/FireMarshal/FireServiceResources/PublicFireSafetyGuidelines/04-08-10at1.html>

The CTM identifies a lower and upper range of the number of firefighters required to respond for each of the four risk levels. The actual number of firefighters within each range is based upon analysis of actual fires, the OHSA Section 21 Guidance Notes affecting firefighters, and industry best practices.

The Critical Task Matrix was informed by the NFPA 1710 and 1720 Standards in place at the time of its development. These standards are both identified in the reference section of PFSG 04-08-10. In contrast to these NFPA Standards the CTM includes very broad lower and upper level incident response ranges to effectively, efficiently and safely conduct fire suppression operations. For example, to safely complete the tasks associated with a fire in moderate risk (Group C - Residential Occupancy) the CTM identifies a range of 16 to 43 firefighters that would be required. In part, this range can be associated with the range of fire suppression resources that may be available in Ontario that include volunteer, part-time and full-time firefighters.

8.4.2

NFPA 1710 Standard (2020 Edition) (Career / Full-time) (Urban)

The **NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments** (2020 Edition) provides fire suppression staffing performance targets for municipalities that utilize predominately career (full-time) firefighters.

Relevant references from NFPA 1710 include the following:

- This standard applies to the deployment of resources by a fire department to emergency situations when operations can be implemented to save lives and property²⁸

²⁸ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 1 Administration, Application Section 1.3.1

- The standard is a performance target for most common responses and a platform for developing the appropriate plan for deployment of resources for fires in higher hazard occupancies or more complex incidents²⁹

These NFPA 1710 references support the strategic priority of saving lives and property, as well as recognizing the standard as a “**performance target**” for determining the appropriate level of resources based on the complexity and level of fire risk present. This standard identifies recommended firefighter deployment benchmarks based on the fire risks present within a range of building occupancy types.

The NFPA 1710 Standard is designed for application within a broad range of jurisdictions across North America. This standard was not specifically developed for the delivery of fire suppression services within the Province of Ontario that has a more stringent Fire Code and Building Code than may be found in other jurisdictions. For example, **Ontario Regulation 364/13** requires mandatory annual fire inspections and fire drills in vulnerable occupancies designated as a care and treatment occupancy, a care occupancy or a retirement home. Ontario also has mandatory requirements for sprinkler system installation in vulnerable occupancies, and requirements for enhanced fire and life safety systems in other building occupancies such as high-rise buildings.

It is also important to note that the NFPA 1710 Standard highlights that the fire suppression deployment model be based on a formal Community Risk Assessment.³⁰ In Ontario, the development of a CRA is now a mandatory requirement for all municipalities to comply with O. Reg. 378/18: Community Risk Assessments. In our view, the City has responded to this regulation by retaining Dillon Consulting to prepare the 2021 Community Risk Assessment in conjunction with this FMP.

²⁹ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 1 Administration, Application Section 1.3.2

³⁰ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 5 Fire Department Services, Section 5.2.1.1 Fire Suppression Capabilities

Together these documents provide a comprehensive analysis of the City’s “needs and circumstances” as required by the FPPA to assist Council in the decision-making process to determine the appropriate level of fire services for the community.

The NFPA 1710 Standard includes the following fire suppression deployment models based on the type of building occupancy and potential fire risks present:

- Initial Arriving Company
- Second Arriving Company
- Single-Family Dwelling Initial Full Alarm Assignment
- Open-Air Strip Shopping Center Initial Full Alarm Assignment
- Apartment Initial Full Alarm Assignment
- High-Rise Full Alarm Assignment

8.4.2.1

Initial Arriving Company

The Initial Arriving Company is commonly referenced within the fire service as the initial responding apparatus deployed to respond to an emergency incident (initial response). Fire service leaders and professional regulating bodies have agreed that until a sufficient number of firefighters are initially assembled on-scene, initiating tactics such as entry into the building to conduct search and rescue, or initiating interior fire suppression operations **are not** safe practices. If fewer than four firefighters arrive on scene, they must wait until a second apparatus or additional firefighters arrive on scene to have sufficient staff to commence these initial activities.

Within the NFPA 1710 Standard an ‘**Initial Arriving Company**’ is referenced as an ‘Engine Company’ with a staffing of four firefighters whose primary functions are to pump and deliver water and perform basic firefighting at fires, including search and rescue.

An Initial Arriving Company of four firefighters once assembled on-scene is typically assigned the following operational functions: the officer in charge shall assume the role of Incident Commander; one firefighter shall be designated as the pump operator; one firefighter shall complete the task of making the fire hydrant connection; and the fourth firefighter shall prepare an initial fire attack line for operation.

The assembly of four firefighters on the fire scene provides sufficient resources to safely initiate **limited fire suppression, or rescue operations**.

This first crew of four firefighters is also able to conduct the strategic operational priority of “size-up” whereby the officer in-charge can evaluate the incident and where necessary, request additional fire suppression resources that may not have been dispatched as part of the initial alarm.

The City’s current fire suppression deployment model ensures the response of an **“Initial Arriving Company”** with a staffing of four firefighters in the seven urban stations, as referenced in the NFPA 1710 Standard.

The NFPA 1710 fire suppression deployment model for the initial arriving company requires four firefighters arriving on scene with an ‘Engine Company’ within a four minute (240 seconds) travel time to 90% of the fire suppression incidents.

8.4.2.2 Second Arriving Company

The NFPA 1710 Standard (2020 Edition, Section 4.1.2.1 (4)) includes a new performance target for the deployment and arrival of the second responding apparatus. The NFPA 1710 fire suppression deployment model for the second arriving company requires four firefighters arriving on scene with a ‘Second Company’ within a six minute (360 seconds) travel time to 90% of the fire suppression incidents.

8.4.2.3 Single-Family Dwelling - Initial Full Alarm Assignment

In comparison to the deployment of an ‘Initial Arriving Company’ the term **‘Initial Full Alarm Assignment’** refers to “Those personnel, equipment, and resources ordinarily dispatched upon notification of a structure fire”³¹. An initial full alarm assignment represents the ‘total’ number of firefighters initially deployed to a structure fire.

In this deployment standard a single-family dwelling is defined as “a typical 2,000 ft² (186 m²) two-story single-family dwelling without basement and with no exposures”³². This definition is a further example of the broad definitions utilized by the NFPA that in

³¹ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 3 Definitions, Section 3.3.40 Initial Full Alarm Assignment

³² NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 5 Fire Department Services, Section 5.2.4.1.1

this instance may not necessarily represent the definition of a typical single-family dwelling in Ontario. Most single family dwellings in Ontario have basements to accommodate heating systems.

The NFPA 1710 fire suppression deployment model for an initial full alarm assignment to a single-family dwelling includes a deployment of 16 firefighters (17 if an aerial device is used) described as the **‘total effective response force’** arriving on scene within an eight minute (480 second) travel time to 90% of the fire suppression incidents in this occupancy type. The BFD does respond with a ladder/quint and their current deployment model is 17 firefighters as a minimum.

8.4.2.4

Open-Air Strip Shopping Center – Initial Full Alarm Assignment

In this deployment standard an open-air strip shopping center is defined as ranging in size from 13,000 ft² (1203 m²) to 196,000 ft² (18,209 m²). This deployment model is described as having a total effective response force of 27 firefighters (28 if an aerial device is used).

This deployment standard includes “the establishment of an initial medical care component consisting of at least two members capable of providing immediate on-scene medical support and transport that provides rapid access to civilians or members potentially needing medical treatment”³³. In the City of Burlington these services are provided by the Halton Region Paramedic Services (HRPS). As such the total effective response force to be provided by the BFD would 25 firefighters (26 if an aerial device is used) arriving on scene within an eight minute (480 second) travel time to 90% of the fire suppression incidents in this occupancy type. The BFD does respond with a ladder/quint, resulting in a staffing target of 26 when the aerial is used.

8.4.2.5

Apartment – Initial Full Alarm Assignment

In this deployment standard an apartment is defined as a typical 1200 ft² (111 m²) apartment within a three-story garden style apartment building. This deployment model is also described as having a total effective response force that includes 27 firefighters

³³ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 5 Department Services, Section 5.2.4.2.1 (9)

(28 if an aerial device is used) and includes the same establishment of initial medical care as described in the open-air strip shopping center initial full alarm assignment deployment model that would be provided by the HRPS.

The applicable deployment model for the BFD would include an initial deployment of 25 firefighters (26 if an aerial device is used) described as the 'total effective response force' arriving on scene within an eight minute (480 second) travel time to 90% of the fire suppression incidents in this occupancy type. The BFD does respond with a ladder/quint, resulting in a staffing target of 26 when the aerial is used.

8.4.2.6

High-Rise – Initial Full Alarm Assignment

In this deployment model a high-rise building is described as having the highest floor greater than 75 feet (23 metres) above the lowest level of fire department vehicle access. This deployment model is described as having a total response force of 42 firefighters (43 if the building is equipped with a fire pump).

This deployment standard includes “the establishment of an initial medical care component consisting of a minimum of two crews of at least two members each with one member trained to the ALS level capable of providing immediate on-scene emergency medical support, and transport that provides rapid access to civilians or members potentially needing medical treatment”.

In the City of Burlington these services are provided by the HRPS. This deployment model is therefore described as having a total effective response force that includes 38 firefighters (39 if the building is equipped with a fire pump). It also includes the establishment of two teams of medical care as described in the open-air strip shopping center initial full alarm assignment deployment model that would be provided by the HRPS.

The applicable deployment model for the BFD would therefore include an initial deployment of 38 firefighters (39 firefighters if the building is equipped with a fire pump) described as the 'total effective response force' arriving on scene within a 10 minute and 10 second (610 second) travel time to 90% of the fire suppression incidents in this occupancy type. The BFD does respond with a ladder/quint, resulting in a staffing target of 39 when the aerial is used.

8.4.2.7

Vertical Response Times

High-rise structure fires are unique in the method of fire suppression, as detailed in a publication by the NFPA Structural Firefighting: Strategy and Tactics.³⁴ When a fire is located above the eighth floor, exterior suppression methods are no longer effective. In these cases, fire suppression is mainly undertaken inside the building. Firefighters create a staging floor; usually two floors below the fire floor. Firefighters will travel to and from the staging area and the fire floor or evacuation floors. The staging area is the location of all safety and suppression equipment needed to combat the fire. Firefighters must get this equipment to the staging area. When fire service access elevators cannot be used firefighters climb the stairs with the equipment. Even in the best conditions climbing the stairs takes time. The average vertical response time - average time it takes for a firefighter to climb the stairs - is shown in **Table 22**. To climb to the tenth floor, it would take a firefighter on average about 3.5 minutes.

Table 22: Vertical Response

Floors	Average Time (Minutes) per Floor in Seconds
1-10	20.8
11-20	27.8
21-30	33.6
31-40	45.9
41-48	59.0

Source: Structural Firefighting: NFPA Strategy and Tactics

Ascending with equipment can be physically exhausting. When dedicated fire service access elevators cannot be used additional alarms must be ordered to set-up stairway support to ensure firefighters have enough stamina for fire suppression after ascending. Stairway support is a system to carry equipment to the staging area.

The Ontario fire code was amended in 2019 requiring notification to fire departments and occupants if elevators are out of order for 24 hours or more (Ontario Regulation 33/19).

³⁴ Source: Klaene, Bernard, Sanders, Russell, "Structural Firefighting: Strategy and Tactics," Jones & Bartlett Learning, 2007.

8.4.3

NFPA 1720 Standard (2020 Edition) (Volunteer)

The NFPA 1720 standard further supports initial response staffing to include four firefighters including **“Initial firefighting operations shall be organized to ensure that at least four fire fighters are assembled before interior fire suppression operations are initiated in a hazardous area”**. This particular standard recognizes that the four firefighters may not arrive on the same vehicle, but that there must be four on the scene prior to initiating any type of interior firefighting operations.

Within this standard the NFPA identifies five different categories described as ‘Demand Zones’ that relate to the type of risk that may be found within a typical community; either by population density, travel distance, or special circumstances. This standard then identifies a level of firefighters that would be recommended for each of these fire demand zones. **Table 23** presents the NFPA 1720 (2020 Edition) standard staffing levels by selected fire demand zones.

Table 23: NFPA 1720 Volunteer Deployment

Fire Demand Zones	Demographics	Recommended # of Firefighters Responding	Response Time (Turnout + Travel) in Minutes	Performance Target
Rural Area	<500 people per square mile	6	14	80%
Special Risks	To be determined by Fire Department	To be determined by Fire Department	To be determined by Fire Department	90%

This standard recognises the extended turnout times associated with the use of volunteer firefighters by including the elements of a combined turnout time and travel time as well as the in the number of firefighters responding.

8.5

Importance of Time with Respect to Fire Growth

Understanding how a fire grows from the time of ignition is a critical element of assessing a municipality’s fire protection program including the application of the three lines of defence. Research conducted by the OFM and National Research Council of Canada indicates that a fire in a non-sprinkler residential occupancy can spread from the

room where the fire originates in ten minutes or less. Tests have shown that the fire can extend from the room of origin in as little as three minutes, under fast fire growth conditions.

Fire growth rates, defined by the Society of Fire Protection Engineers as slow, medium and fast, are listed in **Table 24**. The fire growth rates are measured by the time it takes for a fire to reach a one megawatt (MW) fire. This is roughly equivalent to an upholstered chair burning at its peak. A two MW fire is approximately equal to a large upholstered sofa burning at its peak.

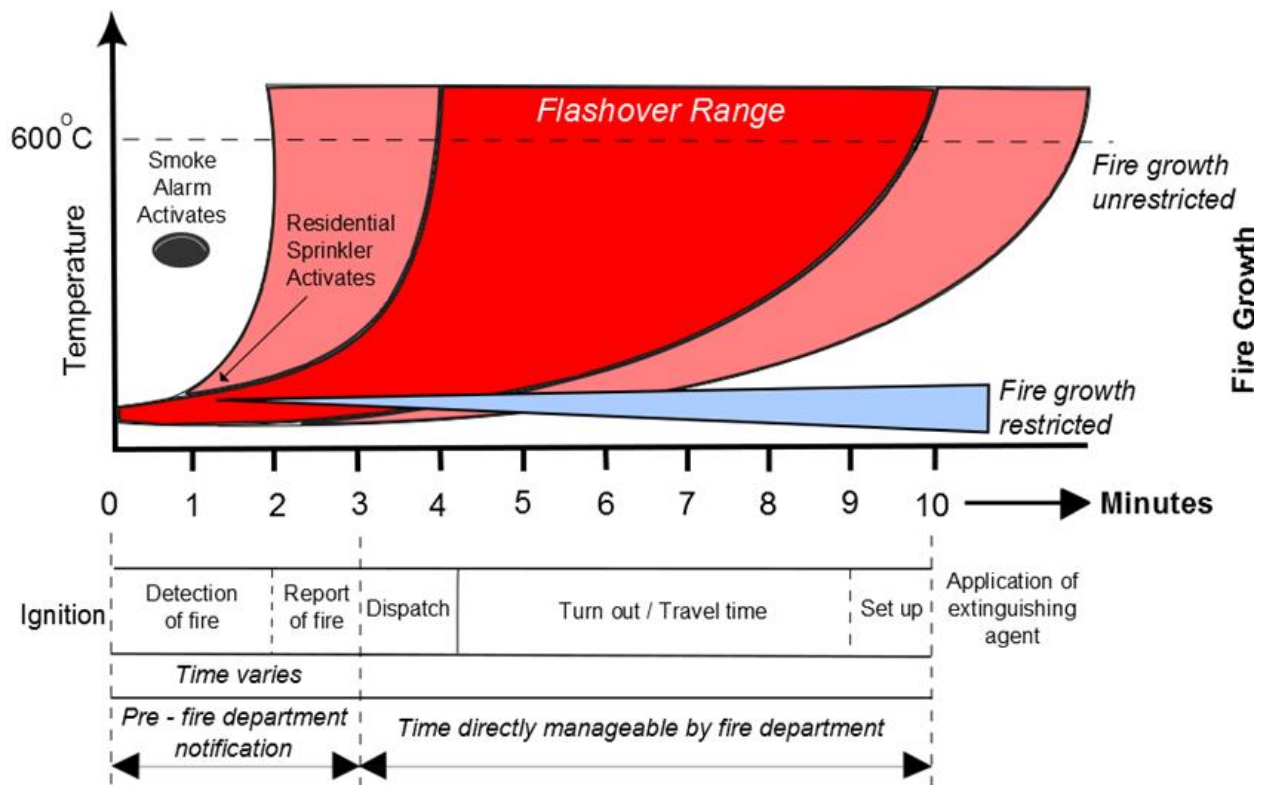
Table 24: Time to Reach 1 MW and 2 MW Fire Growth Rates in the Absence of Fire Suppression

Fire Growth Rate	Time in Seconds to Reach 1 MW	Time in Seconds to Reach 2 MW
Slow	600 seconds	848 seconds
Medium	300 seconds	424 seconds
Fast	150 seconds	212 seconds

Source: “Operational Planning: An Official Guide to Matching Resource Deployment and Risk”, Office of the Fire Marshal, January 24, 2011, p.4

In less than ten-minutes from ignition a fire can reach the point of “flashover” representing a point in the fire’s growth and intensity that all of the combustible items within a given space reach a temperature that is sufficiently high enough for them to auto-ignite. The fire prorogation curve shown in **Figure 10** illustrates the importance of the time period prior to the fire department being notified and alerted to deploy fire suppression resources. Within this pre-fire department notification period the presence of working smoke alarms, carbon monoxide alarms and public education that has guided the residents of the building to develop and practice a home escape plan are critical elements to the life safety of the occupants. It is within this pre-fire department notification period that the first two lines of the “three lines of defense” are critical to the life safety of the occupants. This concept is important for the entirety of a municipality and is underscored in those areas of the community which may have extended response times due to long travel distances. It further reinforces the importance of the individual components of response time (dispatch, turnout, and travel time) as well as total response time.

Figure 10: Example Fire Propagation Curve



Source: Fire Underwriters Survey "Alternative Water Supplies for Public Fire Protection: An Informative Reference Guide for Use in Fire Insurance Grading" (May 2009) and NFPA "Fire Protection Handbook" (2001)

8.6 Proposed Fire Suppression Performance Target

Based on our review of current industry guidelines, standards and best practices and in consultation with the Fire Chief, the analysis within this FMP has identified the fire suppression performance targets that could be considered applicable given the level of fire risk identified within the CRA. This also requires consideration of the planning policy context for the City and the defined urban and rural areas of the City of Burlington.

8.6.1 Defined Urban, Rural and North Aldershot Areas (City's Official Plan)

The City of Burlington Official Plan, 2020 (OP, 2020), was approved by the Region of Halton in November 2020 and is subject to a number of appeals to the Ontario Land

Tribunal. The appeals will be assessed and the Ontario Land Tribunal will issue an Order confirming which parts of the Burlington Official Plan, 2020 are subject to appeal.

The City has prepared an interim working version of the Burlington Official Plan, 2020 (February 2021). The Interim Working Version must be read in conjunction with all appeals, as well as any Orders arising out of subsequent OLT proceedings. The Burlington Official Plan, 2020 is subject to change and the interim working version will require periodic updates.

The City of Burlington OP, 2020 (February 2021) plans for the accommodation of allocated growth to 2031 and is required to be consistent with Halton Region's Official Plan.

Figure 11 identifies the Urban Area, Rural Area and North Aldershot Area of the City as shown on Schedule A: City System of the Official Plan, 2020.

Urban Area. The defined boundary is generally south of the E.T.R. 407, Dundas Street and Highway 403, covering the southern portion of the municipality.

Rural Area. Chapter 9 of the Official Plan, 2020 contains the policy framework for the Rural Area which states that “the protection and strengthening of the rural community is the City’s overarching goal in planning for the Rural Area. This means conserving the area’s rural character and protecting and enhancing its natural environment while enabling the rural economy to evolve and change” (OP 2020 Section 9.1).

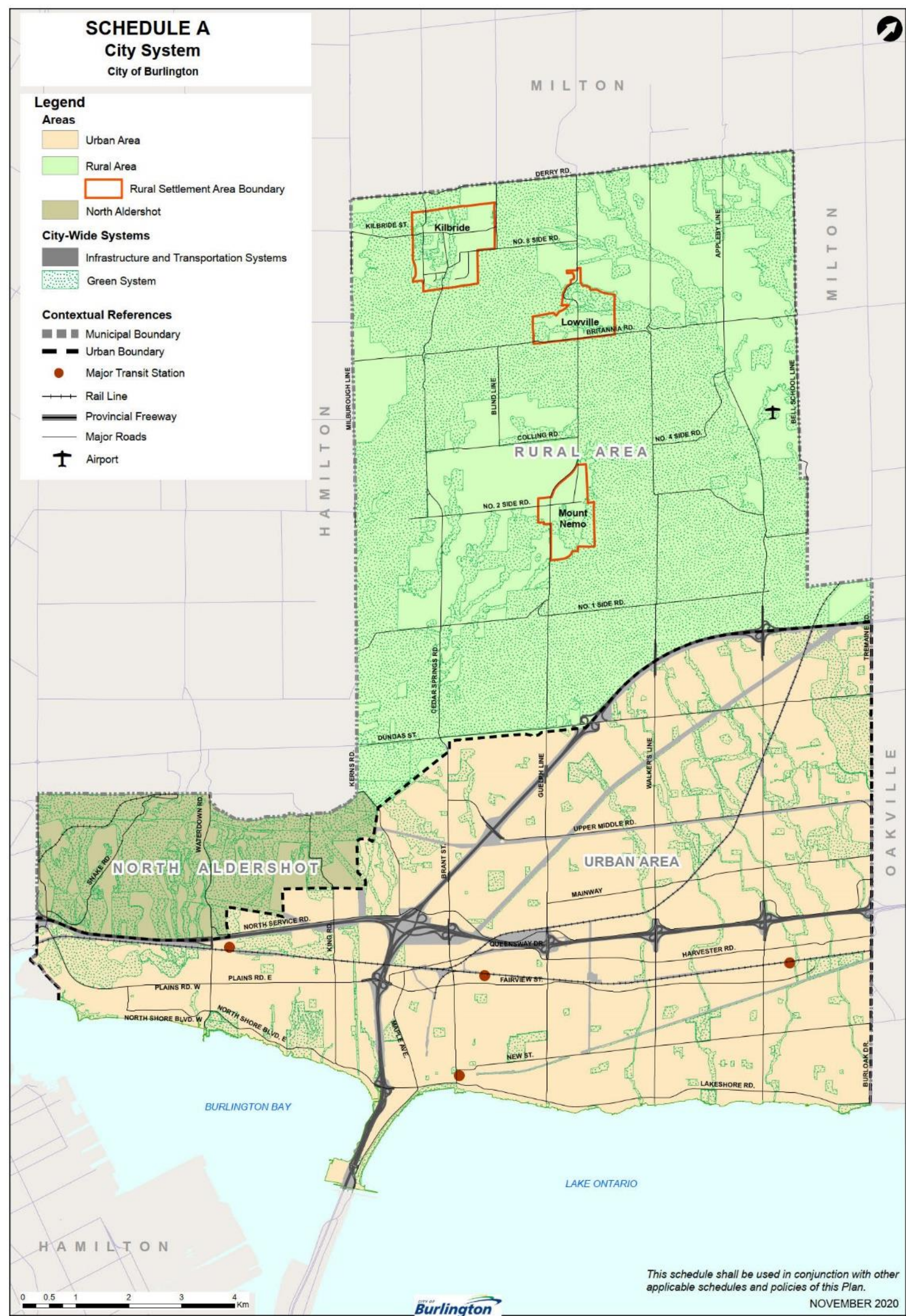
For the purposes of this analysis, information was provided by the BFD supported through City GIS staff to identify the population density of the rural area within the City of Burlington. The 2016 population within the rural area was identified as 5,485 people across an area of 38.17 square miles resulting in an average population density of 144 people per square mile.

North Aldershot planning area is a distinct area separate from both the Urban and Rural areas. North Aldershot is a policy area which has land use permissions that pre-date the current provincial planning framework. The Halton Region Official Plan highlights a number of requirements which need to be met to permit the extension of urban services to those locations within the North Aldershot Policy Area shown as “Eligible for Urban Services” on Map 1 in the Region’s Official Plan (June 19, 2018 Office Consolidation, Policy 139(3)).

As part of the Region's ongoing Official Plan Review/Municipal Comprehensive Review process, Halton Region is reviewing the policy framework for North Aldershot. A June 2020 discussion paper released by the Region on North Aldershot identifies that the goal of the North Aldershot review is to update the land use permissions to reflect the current provincial policy framework. This is anticipated to impact development permissions. In consultation with City of Burlington planning staff, it was confirmed that over the horizon of this FMP, growth will be directed primarily to the City's urban area. Therefore, for the purposes of this FMP and fire suppression analysis, North Aldershot is considered part of the rural area of the municipality.

This review indicates that the NFPA 1710 standard (2020 Edition) is the current applicable industry best practice for the deployment of fire suppression services within the defined urban area of the City, and that the NFPA 1720 Rural Area Demand Zone performance targets are the most applicable for the defined rural area including North Aldershot.

Figure 11: City of Burlington City System (Burlington OP 2020 - Schedule A – Interim Working Version, February 2021)



8.6.2 Proposed Urban Area Fire Suppression Performance Target

In our view the NFPA 1710 “Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments³⁵” provides the most applicable industry performance targets for evaluating the fire suppression deployment capabilities of the BFD within the **urban area** of the City. **Table 25** identifies the proposed performance targets identified in NFPA 1710.

Table 25: Proposed Fire Suppression Performance Targets – Defined Urban Area

NFPA Response Types – Defined Urban Area	Proposed Fire Suppression Performance Targets
Initial Arriving Company	Four firefighters arriving on scene within a four minute travel time to 90% of fire suppression incidents.
Single-Family Dwelling – Initial Full Alarm Assignment (Moderate Risk Occupancy)	16 firefighters (17 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type.
Apartment – Initial Full Alarm Assignment (High Risk Occupancy)	25 firefighters (26 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type.
High-Rise – Initial Full Alarm Assignment (High Rise – High Risk Occupancy)	38 firefighters (39 if building is equipped with a fire pump) arriving on scene within a ten minute and ten second travel time to 90% of fire suppression incidents in this occupancy type.

In addition, the NFPA 1710 Standard defines Total Response Time as “The time interval from receipt of the alarm at the public safety answering point (PSAP) to when the first

³⁵ NFPA 1710, 2020 edition referenced within this FMP

emergency response unit is initiating action or intervening to control the incident”³⁶.

This report previously discussed the importance of the concept of total response time as an indicator of performance. The 2016 Standards of Cover report prepared by the BFD explored and included total response time performance targets, including the component dispatch time, turnout time and travel time. It goes on to highlight the importance of continuous improvement and the relationship here is that improvements to any one component also improves total response time.

Total response is important because that is what the resident or business experiences. Measuring fire suppression performance in this way is a convenient way to get an overall measure. It is also important to pay attention to the component parts as that is how improvements to the whole will occur. Within this FMP **Total Response Time** is measured by the sum of the following three components:

Dispatch Time + Turnout Time + Travel Time = Total Response Time

The applicable NFPA 1710 performance targets for these three components totals 384 seconds for the initial arriving company and 644 seconds for an initial full alarm (except for high rise occupancies as noted below), for 90% of the fire/explosion incidents the fire department responds to.

It is recommended that the BFD establish fire suppression performance targets for the defined urban area based on NFPA 1710 and to use them to monitor and report to Council and the community, including:

- I. Initial Arriving Company - Four firefighters arriving on scene within a four minute travel time to 90% of fire suppression incidents.**
- II. Single-Family Dwelling – Initial Full Alarm Assignment - 16 firefighters (17 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type.**
- III. Apartment – Initial Full Alarm Assignment - 25 firefighters (26 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type.**

³⁶ NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition) Chapter 3 Definitions, Section 3.3.64.6

- IV. High-Rise – Initial Full Alarm Assignment - 38 firefighters (39 if building is equipped with a fire pump) arriving on scene within a ten minute and ten second travel time to 90% of fire suppression incidents in this occupancy type.
- V. Dispatch time: 64 seconds or less for at least 90% of the alarms.
- VI. Turnout Time: 80 seconds or less for all fire-related and special operations incidents
- VII. Total response time of 384 seconds for an initial arriving company and 644 seconds for an initial full alarm (except for high rise incident which shall be 754 seconds) to 90% of fire suppression incidents.

These performance targets are used for leading practice comparators and continuous improvement; they are not outlined as minimum staffing and service level standards. Service levels and staffing are approved by Council.

8.6.3 Proposed Rural Area Fire Suppression Performance Targets

In our view the 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” provides the most applicable industry best practice for evaluating the fire suppression deployment capabilities of the BFD within the **rural area** of the City. **Table 26** identifies the proposed performance target identified in NFPA 1720:

Table 26: Proposed Fire Suppression Performance Targets – Defined Rural Area

NFPA Response Type – Defined Rural Area	Proposed Fire Suppression Performance Target
Rural Demand Zone	6 firefighters arriving on scene within a 14 minute turnout time + travel time to 80% of fire suppression incidents.

It is recommended that the BFD establish fire suppression performance targets for the defined rural area based on NFPA 1720 and to use them to monitor and report to Council and the community, including: Rural Demand Zone – 6 firefighters arriving on scene within a 14 minutes turnout time + travel time to 80% of fire suppression incidents in the defined rural area.

8.7 Historical Emergency Response Analysis

This section of the report provides an overview of historical emergency response performance with reference to the findings of the CRA. It presents additional analysis of historical BFD call data from 2016 to 2020 regarding fire suppression emergency response capabilities.

8.7.1 Methodology

The data used for this analysis is the historic call data of the BFD from January 1, 2016 to December 31, 2020, reflecting a complete five-year dataset. It should be noted that while Station 5 was excluded from the following analysis, this analysis may include some calls that occurred outside the urban area that could impact the travel time and total turnout time analysis. The data set was reviewed, and data outliers were removed.

Section 10.2 of the CRA presents an event history review where call volume was analyzed including an analysis of call volume by type. Relevant data are also reported here, as are the identified risks and key findings of the event history analysis:

- Over the period from January 1, 2016 to December 31, 2020 the volume of emergency calls responded to by the Burlington Fire Department modestly increased between 2016 and 2019 with a slight decrease in 2020.
- For the period from January 1, 2015 to December 31, 2019 the highest percentage of emergency call volume responded to by Burlington Fire Department as defined by the OFM response types were medical/resuscitator calls representing 55.3% of total emergency call volume.
- For the period from January 1, 2015 to December 31, 2019 the second highest percentage of emergency call volume responded to by Burlington Fire Department as defined by the OFM response types were false fire calls representing 13.0% of total emergency call volume.

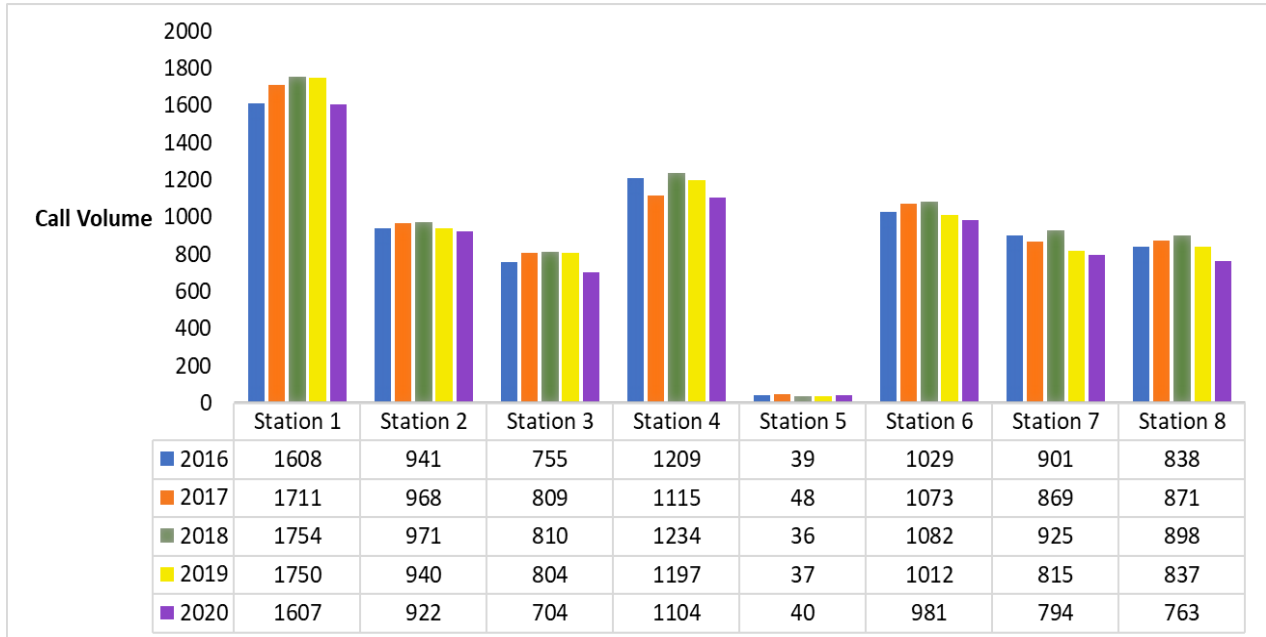
Additional analysis of the historic call data is presented in the following subsections.

8.7.2 Call Volume, All Response Types – By Station

Figure 12 illustrates that for the period from January 1, 2016 to December 31, 2020 the call volume by station was the highest out of Station 1 downtown followed by Station 4 in the southeast. Station 5 had the lowest call volume. Consistent with the analysis of

total call volume, there is variability in the total calls responded to across the five year period with the highest volume, generally, being in 2018 and the lowest volume for all stations in 2020. These are calls by incident and may result in multiple stations needing to respond to the same incident.

Figure 12: Emergency Call Volume by Station



8.7.3

9-1-1- Emergency Calls – Dispatch Time

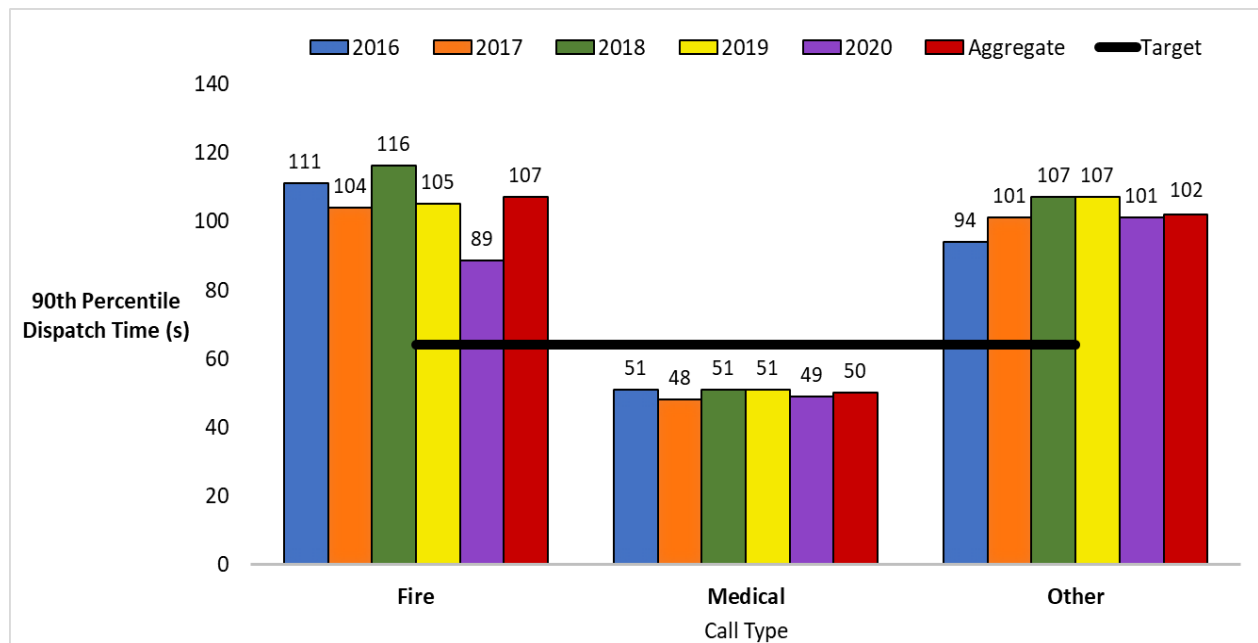
Figure 13 illustrates that for the period from January 1st, 2016 to December 31st, 2020 the BFD consistently exceeded the 64 second 90th percentile dispatch time performance target for the first responding apparatus to fire suppression incidents. Over the five years, the department exceeded the 90th percentile performance target for this type of call by 43 seconds on average. There are a number of more complex call types (e.g. translation required, criminal activity) that are excluded from this target and are provided more time to dispatch the call. This is reflective of the added time necessary to gather the necessary information prior to dispatching. No attempt has been made to try and screen out these types of calls.

In contrast the analysis indicates that for the same period, the performance target was achieved for medical/resuscitator calls (50 seconds). Medical calls are dispatched by CACC where information collection has already been gathered. Fire calls require

additional information gathering and confirmation of location, which can impact dispatch times.

This analysis supports the need for the BFD to further investigate its current alarm processing procedures to target improvement/compliance with the applicable NFPA 1221 call processing performance targets for fire/explosions emergency incidents. See **Section 11.0** for further discussion on the Communications Division.

Figure 13: Emergency Calls - Dispatch Time (Initial Arriving)



8.7.4 Emergency Calls – Turnout Time

Figure 14 illustrates that for the period from January 1, 2016 to December 31, 2020 the BFD consistently exceeded the 80 second turnout time performance target for fire/explosion emergency calls. On aggregate over the five year period, the department-turnout time for the career urban fire stations was 114 seconds, exceeding the 90th percentile performance target by 34 seconds for incidents of this type.

Figure 14: Emergency Call Volume – 90th Percentile Turnout Time by Year (Initial Arriving Company, Excluding Station 5)

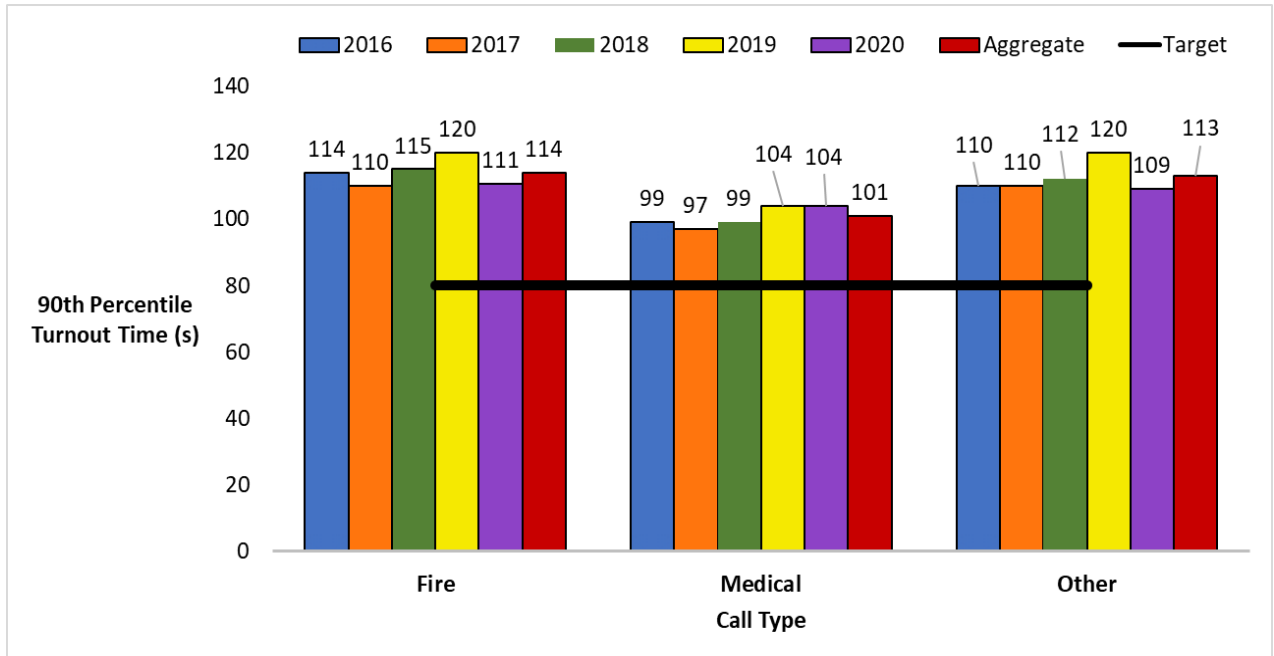
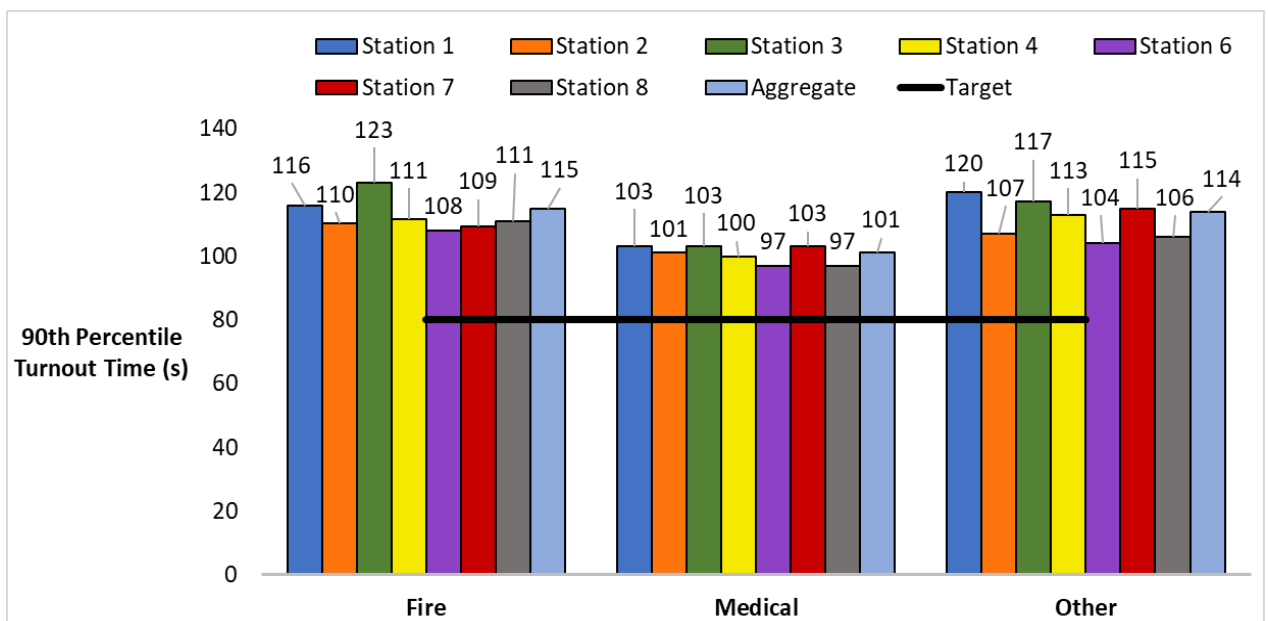


Figure 15 illustrates an analysis of turnout times by station. All stations in the urban area exceed the performance target of 80 seconds for fire/explosions.

Figure 15: Emergency Calls – 90th Percentile Turnout Time by Station (Initial Arriving Company, Excluding Station 5)



8.7.5

Emergency Calls - Travel Time (Initial Arriving Company)

Figure 16 illustrates the 90th percentile travel time by year from 2016 to 2020. Over this period, the BFD exceeded the 240 second travel time performance target.

Figure 16: Emergency Calls - Travel Time by Year (Initial Arriving Company)

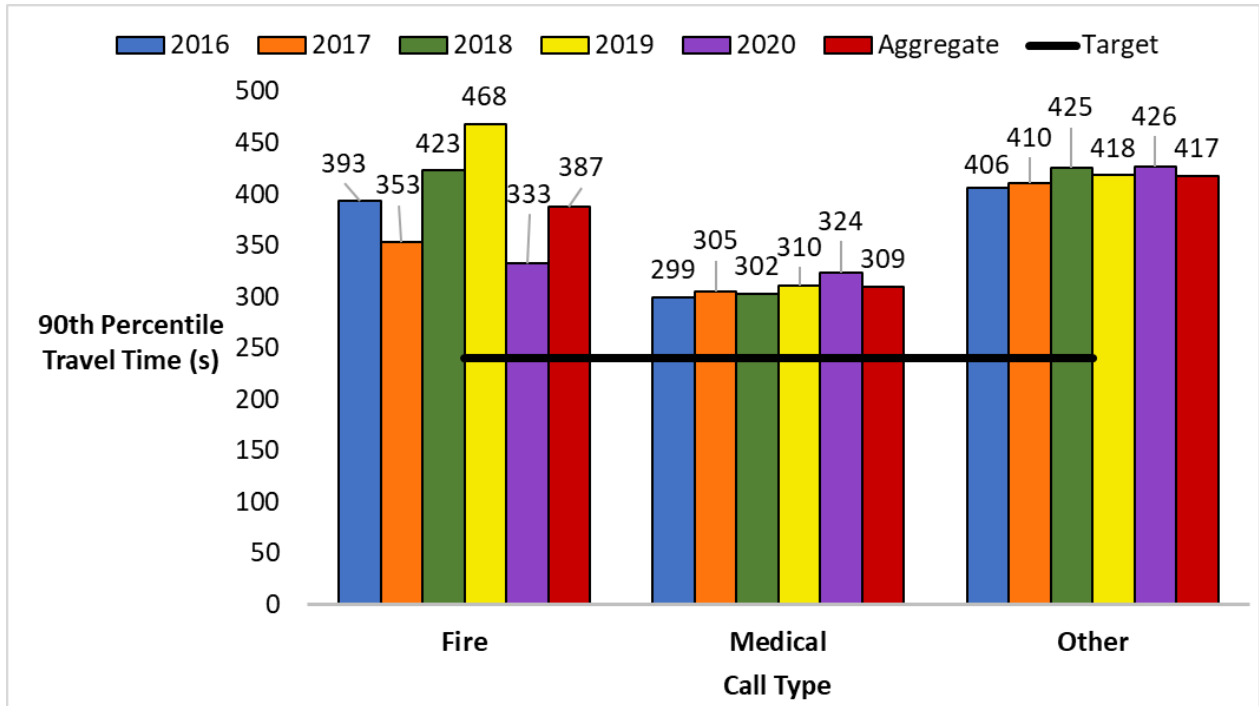
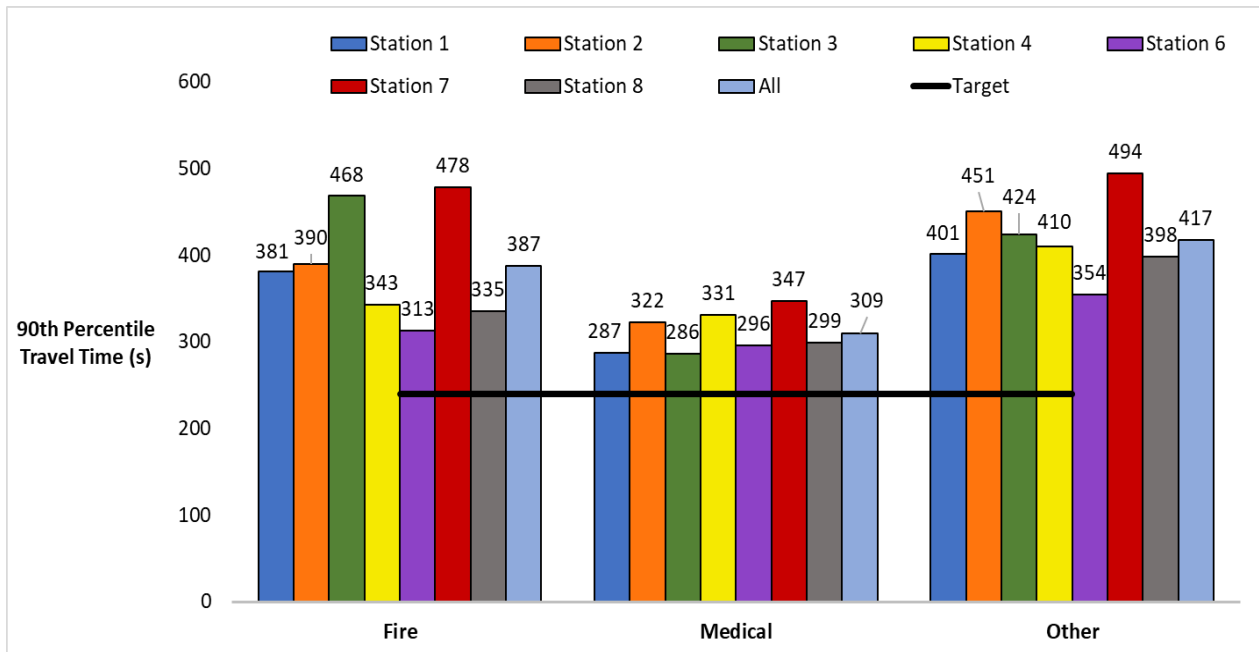


Figure 17 illustrates an analysis of travel times by station highlighting the longer travel times for Station 7 which are automatically deployed into the rural area. This also illustrates a longer travel time for Station 3 in particular for fire/explosion calls.

Figure 17: Emergency Calls – Travel Time by Station (Initial Arriving Company)

8.7.6

Emergency Calls – Total Response Time Performance

The applicable NFPA 1710 Standard performance targets for the three components of response time (dispatch + turnout + travel) totals 384 seconds for 90% of the fire/explosion incidents the fire department responds to.

Figure 18 illustrates that for the period from January 1, 2016 to December 31, 2020 the BFD total response time to all calls (excluding calls where Station 5 was first deployed) consistently exceed the 384 second performance target.

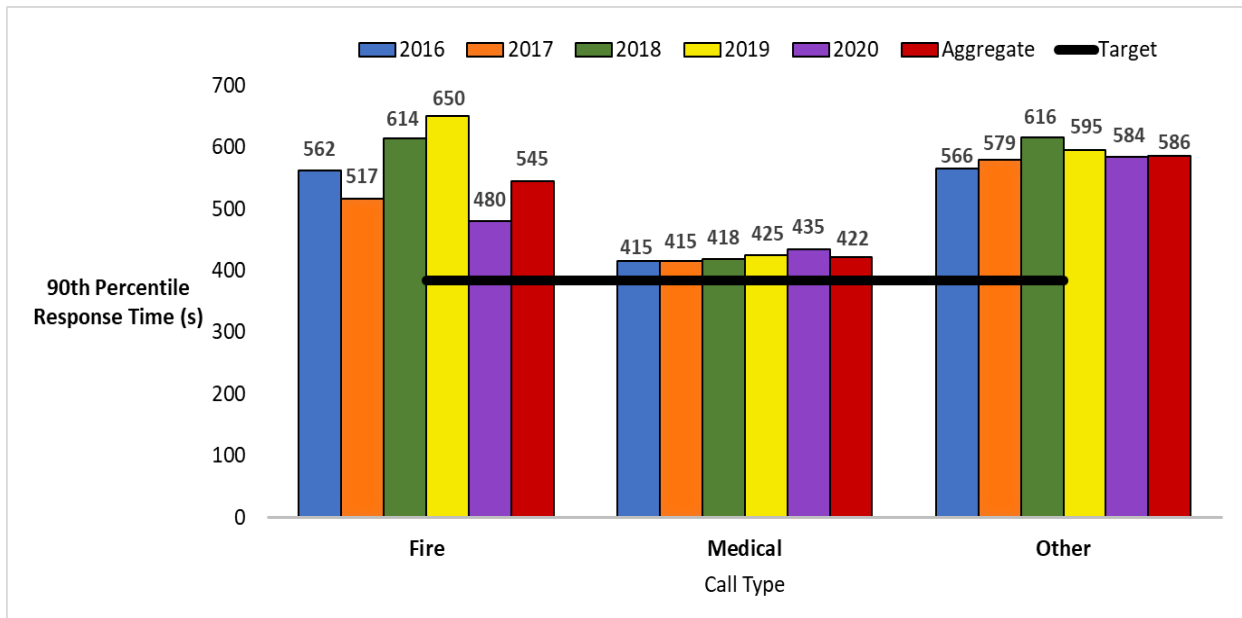
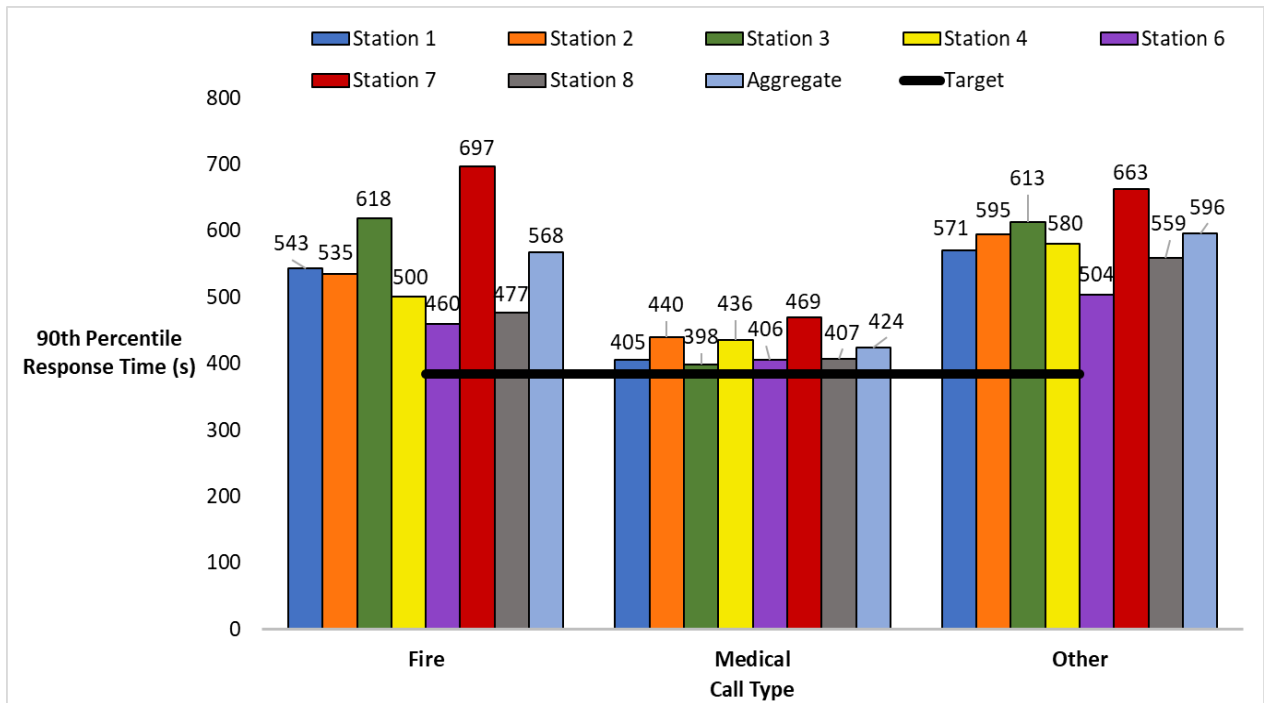
Figure 18: Emergency Calls - Total Response Time (Excluding Station 5)

Figure 19 illustrates the total response time by station. This analysis identifies the longer travel times associated primarily with Station 7 and to a lesser extent Station 3. These are two of the stations simultaneously deployed into the rural area where they would have extended travel times.

Figure 19: Emergency Calls - Total Response Time, By Station

8.7.7

Historical Fire Suppression Emergency Response Summary

The department is exceeding the NFPA 1221 and 1710 performance targets for dispatch time (for fire/explosion incidents) and turnout time based on the analysis of historical call data from 2016 to 2020. As previously discussed, continuous improvement of the individual components of response time can have a positive impact on total response time for emergency incidents. There is an opportunity for the BFD to identify and implement strategies to improve the department's dispatch time and turnout time. This could include Investigating technology advancement, infrastructure improvements and training opportunities to support improved performance times through implemented efficiencies

It is recommended that the BFD identify and implement strategies to improve the department's dispatch time and turnout time. This may require a more in-depth review of each component step in the dispatch and turnout processes to assess where improvements may be possible.

Community Risk Assessment – Identified Risks/Key Findings

The CRA identifies both identified risks and key findings that should be considered as part of assessing the emergency response (fire suppression) deployment coverage within the City. This type of analysis provides further insight into identifying the City's local needs and circumstances as defined by the FPPA. In our view, the CRA analysis highlights that Group C-Residential Occupancies should be considered as the most at risk building stock as supported by the following findings:

- Group C - Residential Occupancies represent 93.53% of the City's existing property stock, and over the five year period from January 1, 2015 to December 31, 2019 were associated with 72.24% of the structure fires within the City.
- Most reported fire related civilian injuries (47) occurred in Group C – Residential Occupancies.

Other applicable CRA findings include:

- Increasing traffic congestion on the existing road network presents the potential for a delay in emergency response times.
- The City currently has 105 buildings defined by the OBC as high-rise buildings with a floor level 18 metres (59 feet) above grade, or 6 storeys. These buildings are distributed throughout the urban area.
- The City of Burlington currently has forty-three (43) registered vulnerable occupancies.
- There are multiple areas with a high concentration of all emergency call types in the downtown core, and along Lakeshore Road south of Fire Station 1.

In our view, the BFD future fire suppression deployment model should prioritize its emergency response deployment capabilities to improve initial arriving company response and the initial full alarm response for identified Group C - Residential Occupancies, and for vulnerable occupancies. Consideration should also be given to the existing risk identified in the Downtown as well as the potential for increased risk due to anticipated growth and changes in built form.

8.9 Existing Emergency Response Deployment Capability Analysis

The following sections detail our analysis of the existing emergency response deployment capabilities of the BFD as conducted using Esri's Network Analyst, a Geographical Information System (GIS) tool developed specifically for the purpose of assessing networks, such as roads.

8.9.1 Modelling Methodology

The Network Analyst tool developed by Esri Inc. was used to create a model of the existing Burlington road network to simulate the emergency response coverage of the BFD. The existing road network used was from a dataset from Land Information Ontario, sourced from the Ministry of Natural Resources and Forestry. The future road network utilizes future new road network identified as part of the ongoing City of Burlington Integrated Mobility Plan and confirmed by the City.

This simulation included the posted speed limits assigned to the existing road network based on the data supplied from the Ministry of Natural Resources and Forestry. An iterative process was undertaken to adjust the speeds throughout the road network to calibrate the existing conditions model to reflect historic travel times and emergency response performance of first responding units for all fire/explosion or medical calls from 2016 to 2020. This iterative process was based on the statistic that from 2016 to 2020, 68% of historic fire explosion/medical calls were reached by the first responding apparatus in four minutes of travel time or less. Most of the records had x, y coordinates available to create a spatial dataset. For those calls without x, y coordinates, a geocoding process was undertaken using the address to find the call location.

To ensure our analysis excluded outliers and included calls only pertaining to fire and medical incidents, the data was filtered and organized into an appropriate format and outliers which included travel times with times less than five seconds or greater than thirty minutes (1,800 seconds) were excluded. Misnomers were also reclassified to ensure our outputs were consistent. **Table 27** presents the posted speed limits and the calibrated speed limits used in Network Analyst.

Table 27: Network Analyst Calibrated Speed

Posted Speed (km/hr)	Calibrated Speed (km/hr)
10	32
15	32
20	32
25	32
30	32
35	32
40	32
45	32
50	33
60	40
70	50
80	60
90	90

8.9.2 Application of NFPA Fire Suppression Deployment Targets

The calibrated road network, combined with the station locations and response time targets were used to build 'response polygons' around each urban fire station. These polygons represent the geographical area where the response target is achieved within the model in regard to staffing and/or a specified amount of travel time.

8.9.2.1 Existing Staffing and Turnout Time

For GIS modelling purposes, to determine BFD's current fire suppression capabilities the number of staff and turnout time for both full-time and volunteer firefighters are required.³⁷

Table 28 illustrates the existing staffing for each apparatus from each of the fire stations as well as the historical (2016 to 2020) turnout time for the applicable full-time and volunteer firefighters which were used to inform emergency response modelling data inputs as applicable. The turnout time for the career stations is only applied when

³⁷ Note that the proposed NFPA 1710 Fire Suppression Performance target for the Urban Area considers turnout time separately from travel time. Whereas the proposed NFPA 1720 Fire Suppression Performance target for the Rural Area includes the turnout time for the volunteer firefighters.

responding to a call in the rural area for comparison to NFPA 1720 performance target. Note that a turnout time was not calculated for the Station 1 volunteers as they are not a part of initial emergency response deployment.

Table 28: Existing Apparatus Staffing and Turnout Time

Fire Station	Apparatus	Full-Time Firefighter Deployment	Full-time Turnout Time 90th Percentile (Seconds) (mm:ss)	Station 5 Volunteer Firefighter Deployment (80% of the Time)	Station 5 Volunteer Firefighter 80th Percentile Turnout Time (Seconds) (mm:ss)
1	Pump 311	4	113 (1:53)	Not Applicable	Not Applicable
1	Rescue 312	2	108 (1:48)	Not Applicable	Not Applicable
1	Pump 301	Not Applicable	Not Applicable	4	Not Calculated
1	Support Unit 301	Not Applicable	Not Applicable	2	Not Calculated
1	Car 30	1	128 (2:08)	Not Applicable	Not Applicable
2	Pump 321	4	104 (1:54)	Not Applicable	Not Applicable
3	Quint 331	4	107(1:47)	Not Applicable	Not Applicable
4	Pump 341	4	104 (1:44)	Not Applicable	Not Applicable
4	Ladder 342	2	127 (2:07)	Not Applicable	Not Applicable
5	Pump 305	Not Applicable	Not Applicable	4	620 (10:20)
5	Tanker 305	Not Applicable	Not Applicable	2	790 (13:10)
5	Support Unit 305	Not Applicable	Not Applicable	2	1286 (21:26)
6	Pump 361	4	107 (1:47)	Not Applicable	Not Applicable
7	Pump 371	4	110 (1:50)	Not Applicable	Not Applicable
7	Rescue 372	2	108 (1:48)	Not Applicable	Not Applicable
8	Quint 381	4	102 (1:42)	Not Applicable	Not Applicable

8.9.3

Scenario #1: Existing Emergency Response Deployment Capability

The findings of the existing staffing and turnout time analysis were applied to the calibrated GIS Model to determine the existing **initial arriving company** and **initial full alarm assignment** response capabilities within the urban area, and the **rural demand zone** capabilities within rural area of the City.

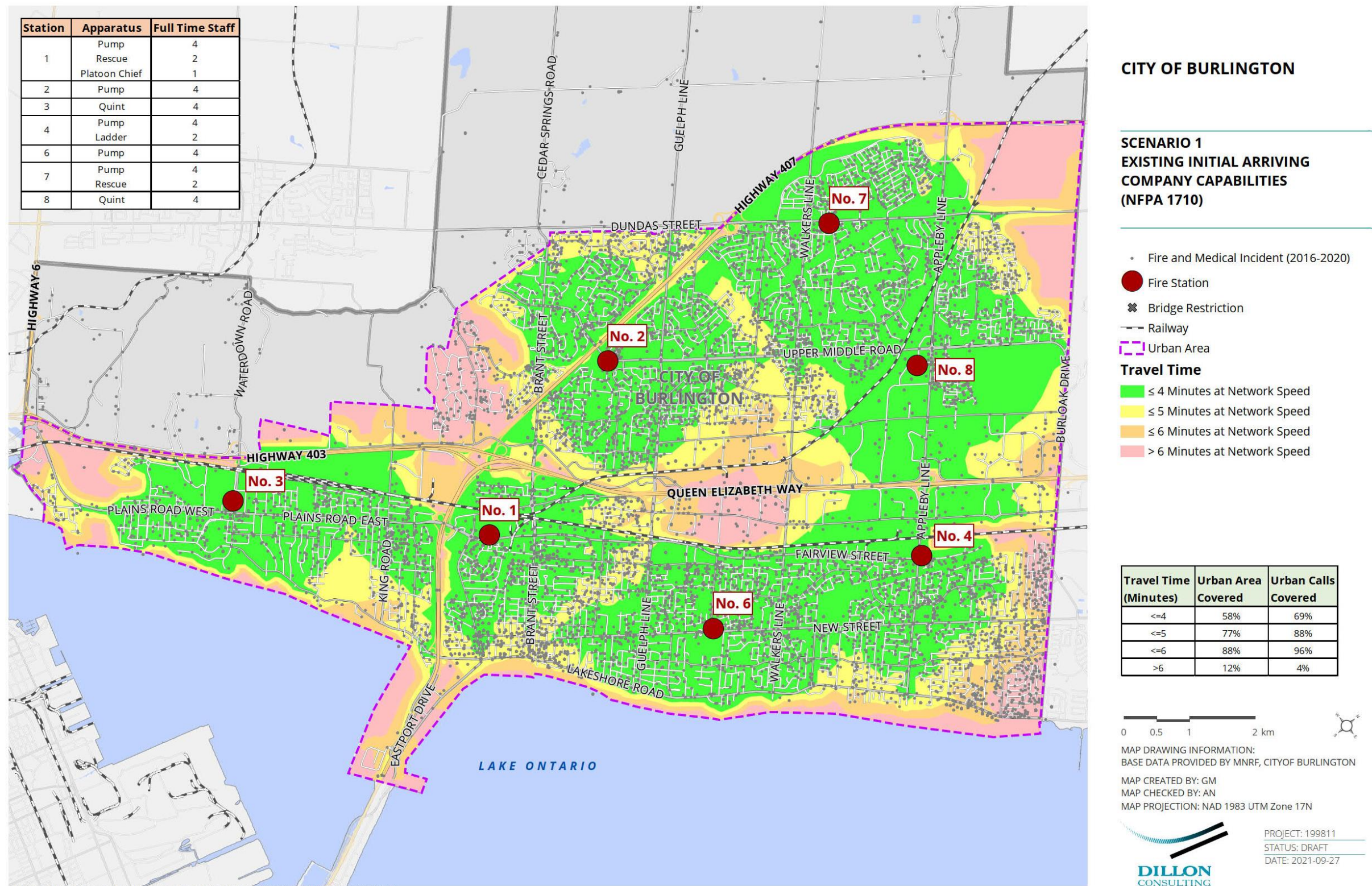
8.9.3.1

Existing Initial Arriving Company Capabilities - Urban Area (NFPA 1710)

This analysis assessed the proposed initial response deployment performance target **“Four firefighters arriving on scene within a four minute travel time to 90% of fire suppression incidents”** as applied to the urban area (geography) and historic calls located in the urban area. This scenario is focused on the deployment model of the full-time firefighters as described above in **Table 28**. This includes a front-line apparatus (a pump or quint) staffed with four full-time firefighters at each urban station.

Figure 20 illustrates that during the BFD is currently able to assemble four full-time firefighters on scene within a four minute travel time to 58% of the urban area, and 69% of the historical (2016-2020) calls within the urban area.

Figure 20: Existing Initial Arriving Company Capabilities - Urban Area (NFPA 1710)



8.9.3.2

Existing Initial Full Alarm Assignment Capabilities – Urban Area (NFPA 1710)

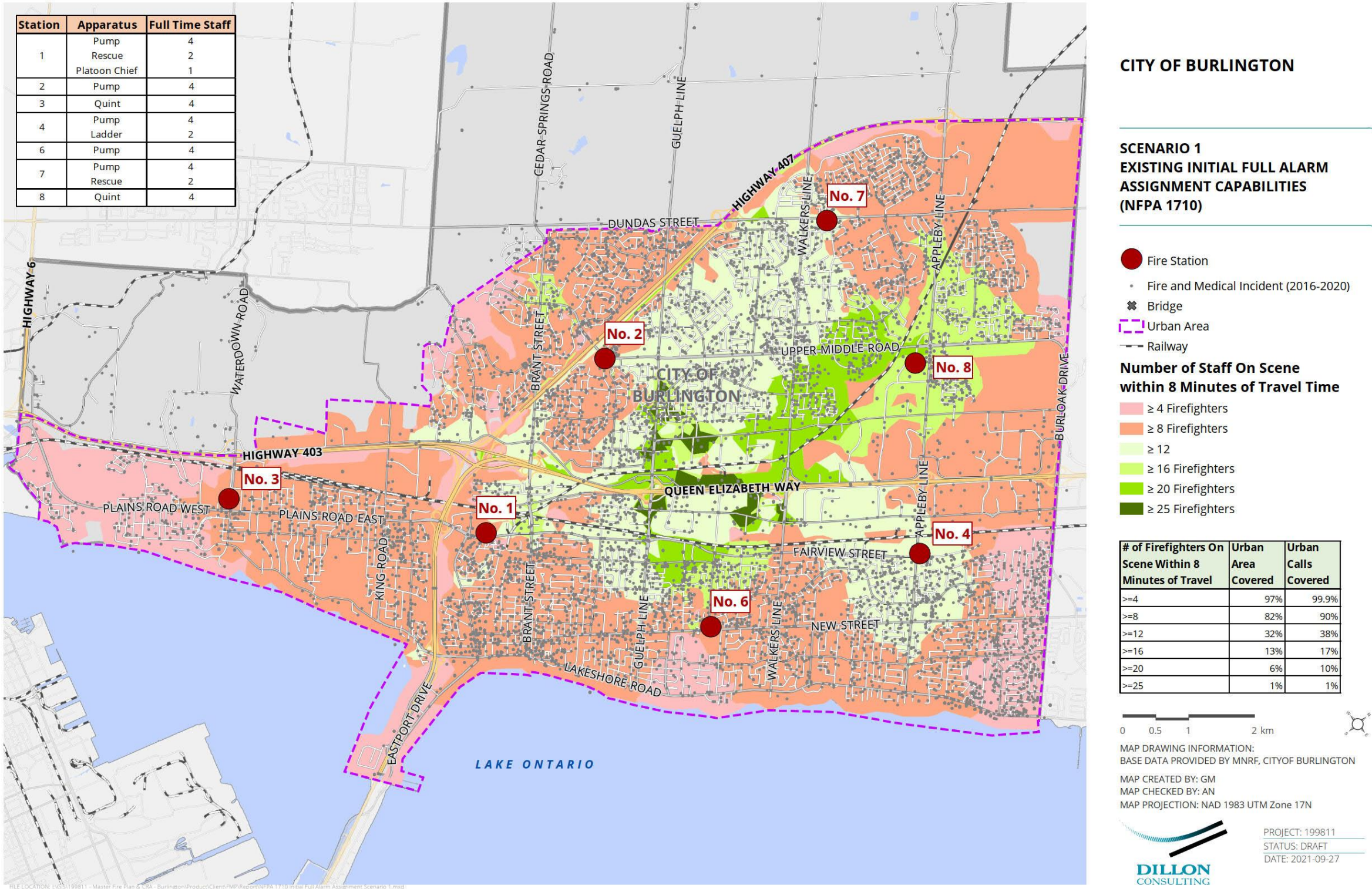
This analysis assessed the proposed initial full alarm assignment performance target for single-family dwellings of **“16 firefighters (17 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents”**. This includes a front-line apparatus (a pump or quint) staffed with of four full-time firefighters at each urban station and additional crews of two full-time firefighters at Stations 1, 4 and 7 (staffing a rescue, aerial, and rescue respectively).

It should be noted that the initial full alarm assignment for the BFD includes four front line apparatus staffed with four firefighters, including an aerial device, and a command car staffed with one, which provides for 17 firefighters. This ensures that an aerial device is present if needed and can be appropriately staffed. For the modelling analysis within this FMP achieving 16 firefighters on the scene within eight minutes of travel time was viewed as meeting the NFPA performance target. An aerial device is not always needed and a command car is dispatched on an initial full alarm, effectively providing 17 firefighters if required.

Figure 21 illustrates that during the BFD is currently able to assemble 16 full-time firefighters on scene within an eight minute travel time to 13% of urban area, and 17% of the historical (2016-2020) calls within the urban area. The BFD can assemble 25 firefighters on scene within an eight minute travel time to 1% of the urban area and 1% of the historical urban calls.

The BFD is currently not able to assemble the total number of firefighters identified with the proposed emergency response performance targets for the Initial Full Alarm Assignment High-Rise (High Rise – High Risk Occupancy) of 38 firefighters (39 if the building is equipped with a fire pump), given the on-duty staffing of 35 firefighters. The number of firefighters identified accounts for the medical team provided by the ambulance service. Other resources called in from off-duty firefighters on overtime or mutual aid from neighbouring municipalities would be required. The volunteer firefighters currently do not contribute to the ability of the department to achieve the initial full alarm assignment depth of response performance target. Further discussion on this can be found in **Section 8.12**.

Figure 21: Existing Initial Full Alarm Assignment Capabilities - Urban Area (NFPA 1710)



8.9.3.3

Existing Response Capabilities –Rural Area (NFPA 1720)

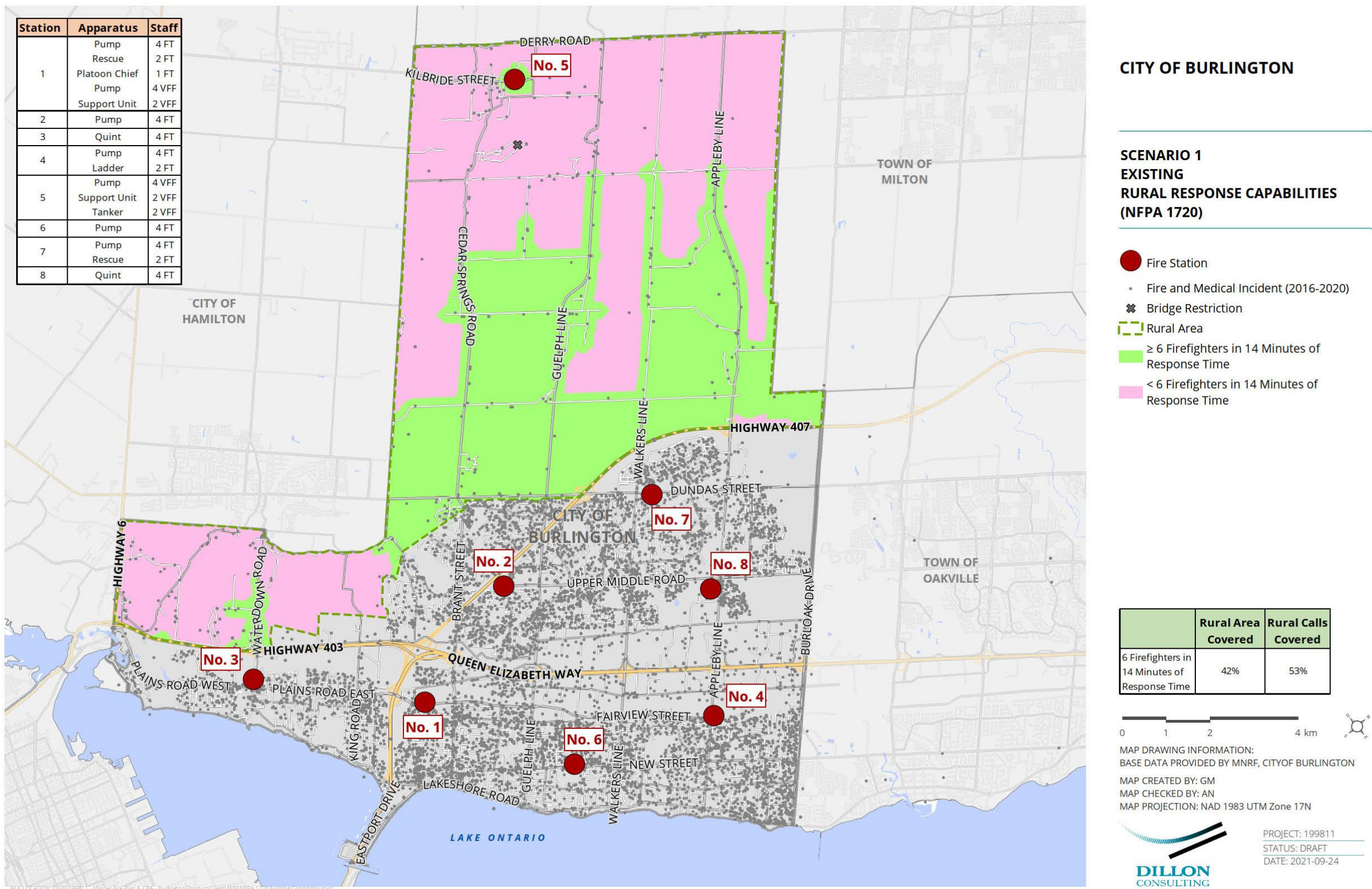
The Station 5 volunteer firefighters have historically been able to turnout four volunteer firefighters (Pump 305) in 10 minutes and 20 seconds and an additional two volunteer firefighters in 13 minutes and 10 seconds. This means that there is a portion of time available to travel to contribute to the 14 minute turnout + travel time performance target.

For all calls for assistance in the rural area, the BFD automatically deploys full-time firefighters from Stations 2 and 7. With faster turnout times, the full-time firefighters contribute to the existing response capabilities into the rural area.

Figure 22 illustrates where the applicable volunteer firefighters and full-time firefighters are able to assemble a response of **“6 firefighters arriving on scene within a 14 minute turnout time + travel time”**. They are able to assemble to 42% of the rural area, and 53% of the historical (2016-2020) calls that occurred in the rural area. The northern part of the rural area and the North Aldershot area are not covered within the six minutes. However, there are existing automatic aid agreements with the Town of Milton and the City of Hamilton.

Further discussion on the rural response capabilities can be found in **Section 8.12**.

Figure 22: Existing Response Capabilities – Rural Area (NFPA 1720)



8.9.3.4

Overview of Scenario #1 - Existing Emergency Response Deployment Capability

The Existing Initial Arriving Company Capabilities – Urban Area analysis presents that the BFD is achieving a performance of 69% of historical calls in four minutes or less travel time. This is lower than the performance target of 90% and a review of the 2016 Standards of Cover and the 2006 Fire Master Plan reveals a steady erosion in the travel time response coverage of the initial arriving company over time. The response capability in comparison to the initial full alarm performance benchmark is quite low at 17% of historic calls and similarly reveals an erosion in travel time response coverage over time.

To understand why these changes in performance may have occurred, BFD consulted internally including with the City's Transportation group. It was identified that the following factors combined are likely to have influenced the travel time performance:

- Intensification - growth within the City resulting in increased overall traffic congestion;
- Posted speed limits - reduction in posted speed limits on some Burlington roads affecting overall travel speeds;
- Adhering to a department policy, fire apparatus are not permitted to travel greater than 10 km/h above the posted speed limit; (in combination with reduced posted speed limits)
- Construction and road closures – increased traffic on local roads due to construction on major highway on/off ramps and/or traffic re-routing from major highways (401, 403) in the event of a collision. This is further compounded by inter-municipal travel increases; and
- Traffic calming – that the increased use of traffic calming measures such as speed humps may be having an impact on fire apparatus travel time.

It is recommended that the BFD work with the City's Transportation Services department to look for opportunities to improve travel time through coordinated efforts, such as signal coordination, traffic calming, posted speed limits, lane reductions, and other traffic measures.

Table 29 illustrates a summary of the existing emergency response deployment capabilities of the BFD. The analysis illustrates an existing performance in the urban area

that will be exacerbated by growth. Growth considerations are described in **Section 8.10** followed by potential future fire suppression scenarios with consideration to growth and existing conditions for the urban area in **Section 8.11**.

Table 29: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-Scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls

8.10 Future Growth Considerations

To support the analysis of the current and future fire suppression services provided by the BFD, Dillon consulted with City planning staff, and reviewed the City of Burlington Official Plan (OP), 2020 (Interim Working Version February 2021), the Halton Region 2020 Allocation Program (six year program), the 2019 Burlington Development Charges Background Study, and Halton Region Official Plan Amendment (ROPA) 48 to understand future growth considerations.³⁸ The following sections describe the long-term plan for growth and the built form based on best available information at the time of analysis.

It is important to note that at the time of writing, growth management planning in the form of municipal comprehensive reviews are underway across Ontario's Greater Golden Horseshoe, including Halton Region.

It is recommended that the BFD working with the City's Legal and Community Planning departments monitor, update and implement the recommendations of this Fire Master Plan, as the municipal comprehensive review process and additional City planning projects unfold, whereby more detailed and refined information will become available in regard to growth areas, population projections, and built form. The Fire Chief will provide additional information and requests to support resource needs for growth following the City's established processes.

8.10.1 Population Projections

In regards to historic population growth, in 2011 the City's population began to exceed Halton Region's Best Planning Estimates (BPEs) for population while occupied dwelling

³⁸ R.OPA. 48 was approved on November 19, 2021. It did not update the 2031 population projection allocations.

units have historically been fairly consistent with the B.P.E.³⁹ Currently, as identified in the Regional Official Plan, the City's population is forecast to grow to 193,000 by 2031.⁴⁰

However, Halton Region is currently undergoing a municipal comprehensive review. They have released a draft preferred growth concept, which ultimately will result in an updated 2031 population forecast for the City of Burlington along with further growth allocation to 2051, to be implemented through a future Regional Official Plan Amendment.

The Region's draft preferred Growth Concept, which was released in November 2021, identifies an estimated 2021 population of 195,000 for the City of Burlington, which is forecasted to grow by 22,800 people by 2031.⁴¹ **This forecast is not formal and not approved by the Region or Province and therefore is subject to change. It is provided here only for some context on the potential magnitude of population growth over the horizon of this Fire Master Plan.**

8.10.2 Regional Urban Structure

ROPA 48 establishes a Regional Urban Structure that includes strategic growth areas, regional employment areas, built-up areas, and designated greenfield areas. In conformity with the Province of Ontario Growth Plan, the identified Regional Urban Structure is designed to accommodate population, household, and employment forecasts.

Figure 23 identifies the Regional Urban Structure from Adopted ROPA 48 which for the City of Burlington includes transit corridors, three Major Transit Station Areas (Aldershot, Burlington, and Appleby GO Stations), Uptown Burlington as a Primary Regional Node, and Downtown Burlington as a Secondary Regional Node. The

³⁹ Source: Discussion with City staff and the City of Burlington Staff Report PL-21-21 Submission on Region of Halton's Growth Concepts Discussion Paper.

⁴⁰ This number includes an approximate 4% population undercount. Note that the 2019 City of Burlington Development Charges Background Study identifies a mid-2031 forecast population of 200,400 including the Census undercount of approximately 3.6% and an institutional population being special care facilities (e.g., nursing homes, senior residences).

⁴¹ Source: PL-06-22, Submission on Region of Halton's Draft Preferred Growth Concept and Draft Land Needs Assessment.

Burlington GO Station Major Transit Station Area is also identified as an Urban Growth Centre. The Regional Urban Structure also identifies the urban area for the City.

8.10.3

City of Burlington Official Plan and City System Components

The City of Burlington Official Plan, 2020 (O.P, 2020), was approved by the Region of Halton in November 2020 and is subject to a number of appeals to the Ontario Land Tribunal. The appeals will be assessed and the OLT will issue an Order confirming which parts of the Burlington Official Plan, 2020 are subject to appeal.

The City has prepared an interim working version of the Burlington Official Plan, 2020 (February 2021). The interim working version must be read in conjunction with all appeals, as well as any Orders arising out of subsequent OLT proceedings. The Burlington Official Plan, 2020 is subject to change and the interim working version will require periodic updates.

The City of Burlington OP, 2020 (Interim Working Version February 2021) plans for the accommodation of allocated growth to 2031 and is required to be consistent with Halton Region's Official Plan. **Figure 24** identifies the Urban Area, Rural Area, and North Aldershot policy area of the City as shown on Schedule A: City System of the Official Plan, 2020.

Figure 23: Regional Urban Structure (Halton Region - Map 1h - Adopted ROPA 48)

Attachment #3

Map 1h
Regional Urban Structure

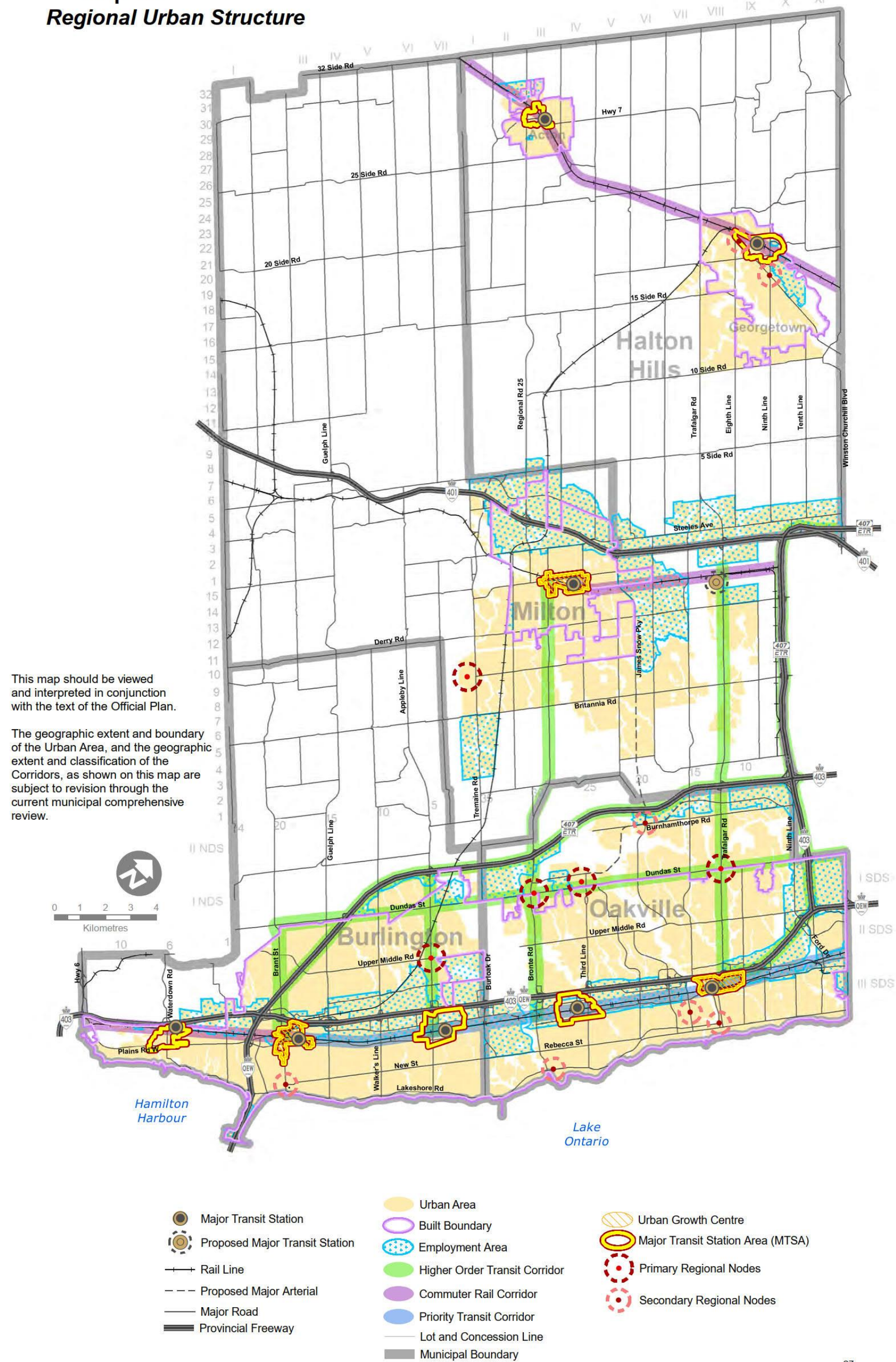
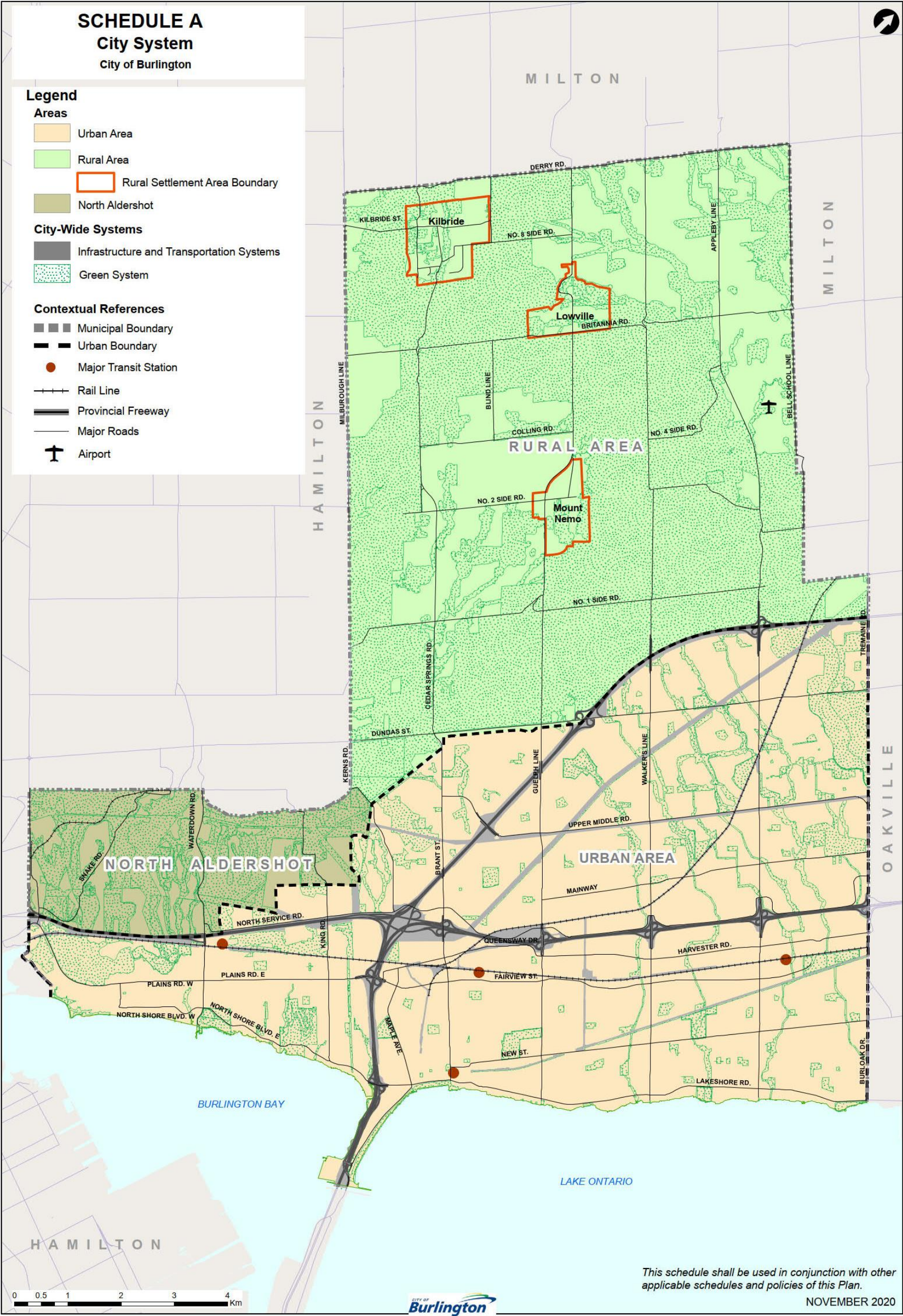


Figure 24: City of Burlington City System (Burlington OP 2020 - Schedule A – Interim Working Version, February 2021)



8.10.4 Growth Areas

The City's Official Plan, 2020 will manage and direct the development and planning of land uses and is intended to accommodate and plan for housing, population and employment growth to 2031. There are elements of the urban system that extend beyond the horizon of the Plan, which establishes a long-term vision for the urban area that will grow primarily through intensification. One area of the City that is planned for greenfield growth is the Tremaine-Dundas (Evergreen) Community (**Figure 25**). The Evergreen Community consists of approximately 67 hectares of developable land located at the northwest corner of Tremaine Road and Dundas Street. This area will result in the addition of some future roads and according to the City's OP is expected to accommodate approximately 1,945 to 2,030 residents through a range and mix of housing types (Policy 8.8.1(2)).

The majority of growth for the City will be accommodated through intensification, (i.e., growth within the existing urban area). Areas of the City that will accommodate growth through intensification are consistent with the current Regional Urban Structure and are identified in the City's Official Plan, 2020. As shown **Figure 26**, this includes Primary Growth Areas and Secondary Growth Areas. At a high level the Primary Growth Areas include: three Major Transit Station Areas (MTSA) (Aldershot, Burlington, and Appleby GO Stations); Downtown Burlington; and Uptown Burlington. This is supportive of a nodes and corridors-based urban structure.

Urban Growth Centre and Major Transit Station Areas

Halton's ROPA 48 (Table 2b) identifies that the Downtown Burlington Urban Growth Centre / Burlington GO MTSA (**Figure 27**) will be planned to achieve a minimum density target of 200 people and jobs combined per hectare by 2031, with a general target proportion of 65% residential and 35% employment. The Appleby GO MTSA (**Figure 29**) which is primarily employment has a general target proportion of 40% residential and 60% employment, and a minimum density target of 120 people and jobs per hectare identified in R.OPA 48. For the Aldershot GO MTSA (**Figure 28**), a minimum density target of 150 people and jobs per hectare is identified in R.OPA 48 with a general target

proportion of 80% residential and 20% employment.⁴² The City of Burlington is currently working on Area Specific Plans for the three GO Station MTSA's to guide future development and investment in these areas.

Downtown Urban Centre

The Downtown Urban Centre is identified in ROPA 48 as a Secondary Regional Node. The City's OP, 2020 identifies general objectives for the Downtown Urban Centre which includes establishing the Downtown as a major centre for office, retail, service commercial, residential, culture, and public service facilities (Policy 8.1.1(3.1)). Land uses for the Downtown Urban Centre identified in the City's OP are shown in **Figure 30** with the maximum building heights identified in the City's OP shown in **Figure 31**.

Based on the legend in **Figure 31** Low-Rise buildings range from a maximum height of 2.5 to 4 storeys; Mid-rise buildings have a maximum height of 11 storeys and tall-buildings range from a maximum height of 13 to 25 storeys. Schedule D-2 (**Figure 31**) does not identify maximum building heights within the Apartment Neighbourhood Precinct, rather it points to the built form policies that require height and massing that is compatible with existing buildings on and adjacent to the infill site (Policy 8.1.1(3.12.1)).

Uptown Urban Centre

The Uptown Urban Centre anchored at the intersection of Upper Middle Road and Appleby Line is identified in ROPA 48 as being a Primary Regional Node that is "planned to accommodate growth and contain a concentration of public service facilities or transit-supportive high-density mixed uses" (Policy 82.1 – R.OPA 48). Land uses for the Uptown Urban Centre identified in the City's OP 2020 are shown in **Figure 32**. The City's OP identifies general objectives for this area which includes establishing Uptown as an

⁴² The minimum density targets for both the Appleby GO MTSA and the Aldershot GO MTSA are included in R.OPA. 48. Area specific plans will provide direction for full build out (i.e. to be achieved beyond 2051). This does not mean that growth will not occur in these areas within the horizon of this Fire Master Plan. The amount and location of growth planned for and occurring in these areas will need to be monitored over the horizon of this FMP.

Urban Centre composed of retail and service commercial, employment, residential and public service facility uses (Policy 8.1.1 (4.1)).

Secondary Growth Areas

The Secondary Growth Areas identified in the City's OP 2020 (**Figure 26**) further reflect the nodes and corridors urban structure and are expected to transition over time. The City's OP states that these areas shall promote a transit-supportive and pedestrian-oriented environment while ensuring compatibility with adjacent land uses (Policy 7.3.2(1)). Furthermore, development shall be limited to a maximum of mid-rise building form (unless otherwise permitted) which is defined as five to eleven storeys in height (Policy 2.4.2(2)iv).

Figure 25: Tremaine-Dundas Community Secondary Plan Area (Burlington OP 2020 - Schedule R – Interim Working Version, February 2021)

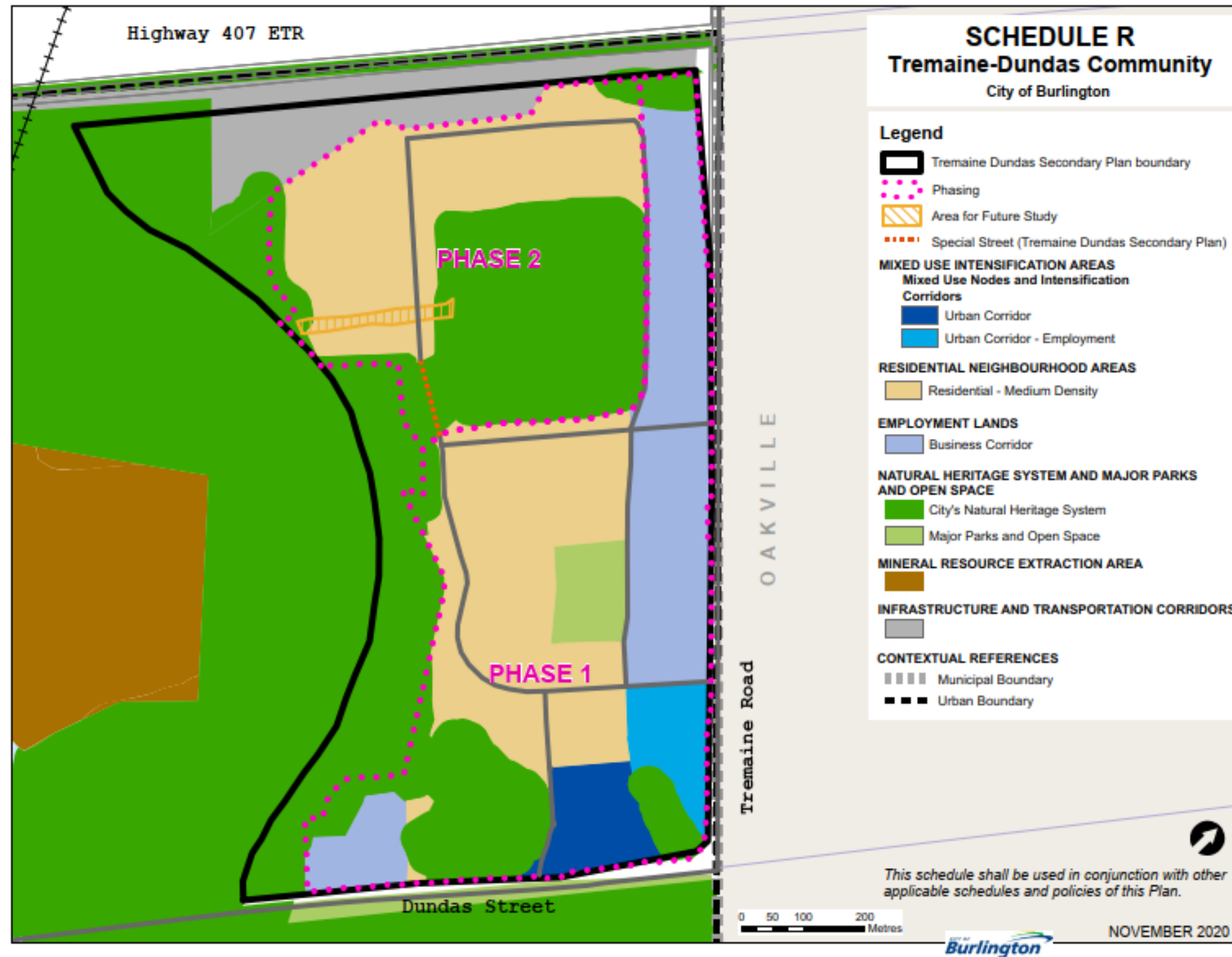


Figure 26: City of Burlington Growth Framework (Burlington OP 2020 - Schedule B-1 – Interim Working Version, February 2021)

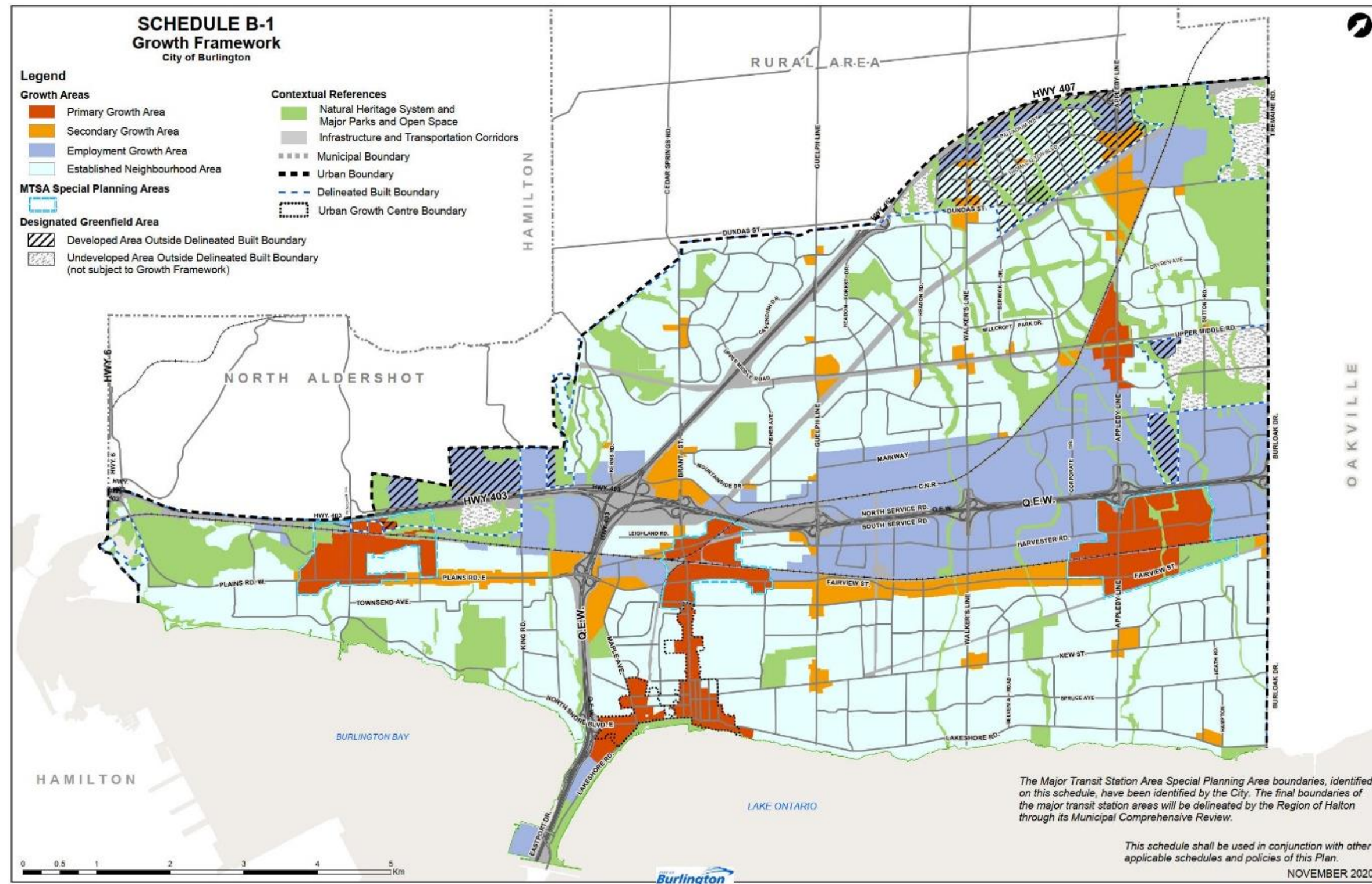


Figure 27: Downtown Burlington Urban Growth Centre / Burlington GO MTSA (Halton Region - Map 6b – Adopted R.OPA 48)

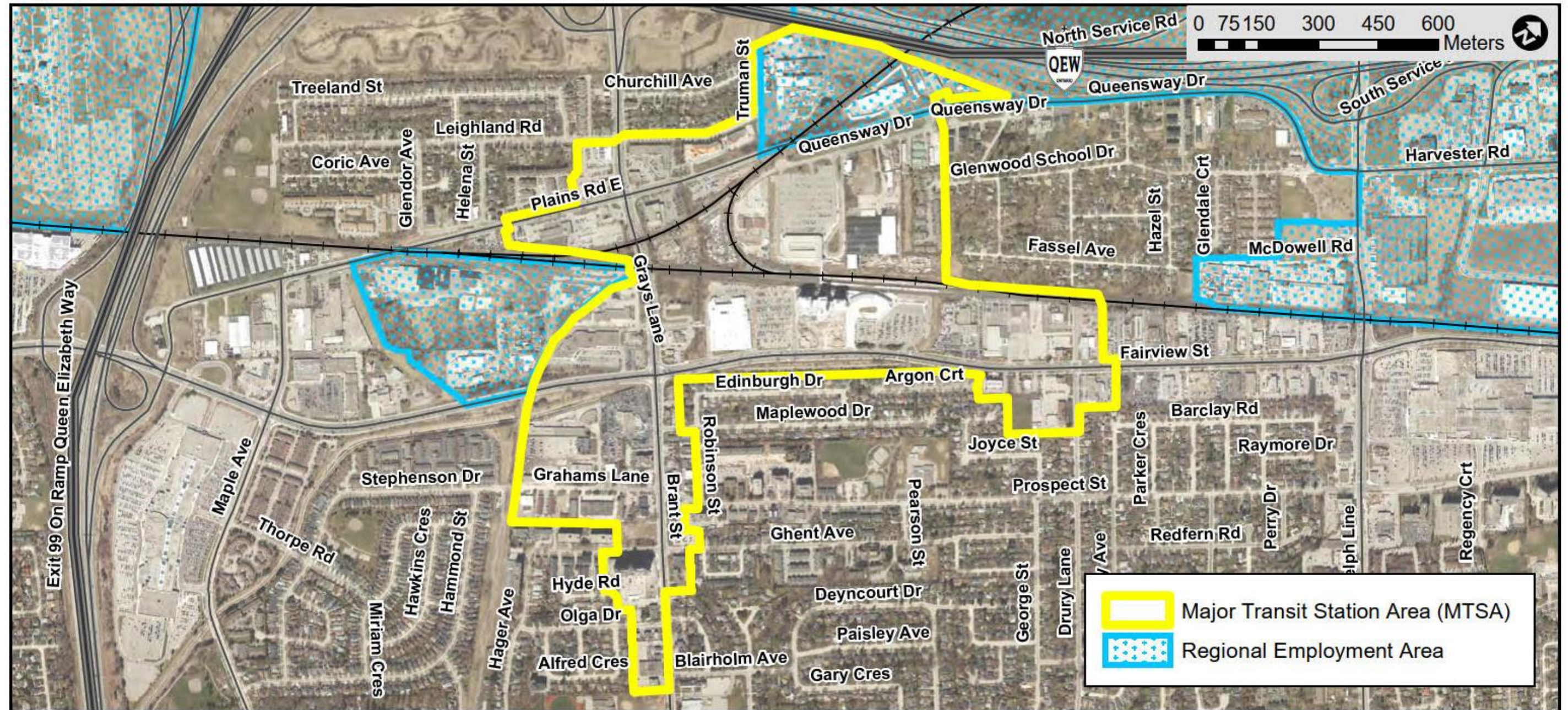


Figure 28: Aldershot GO MTSA (Halton Region - Map 6d – Adopted R.OPA 48)

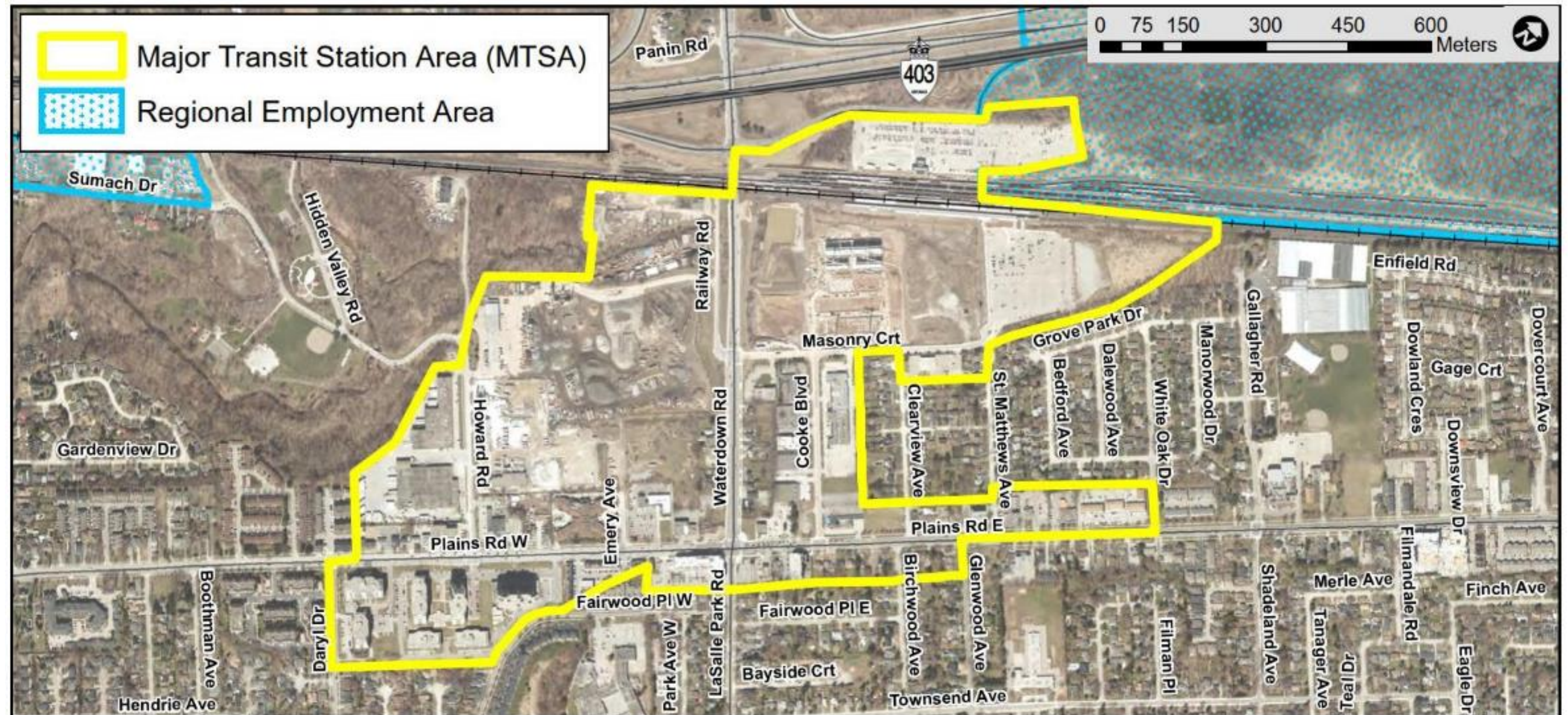


Figure 29: Appleby GO MTSA (Halton Region - Map 6d – Adopted R.OPA 48)

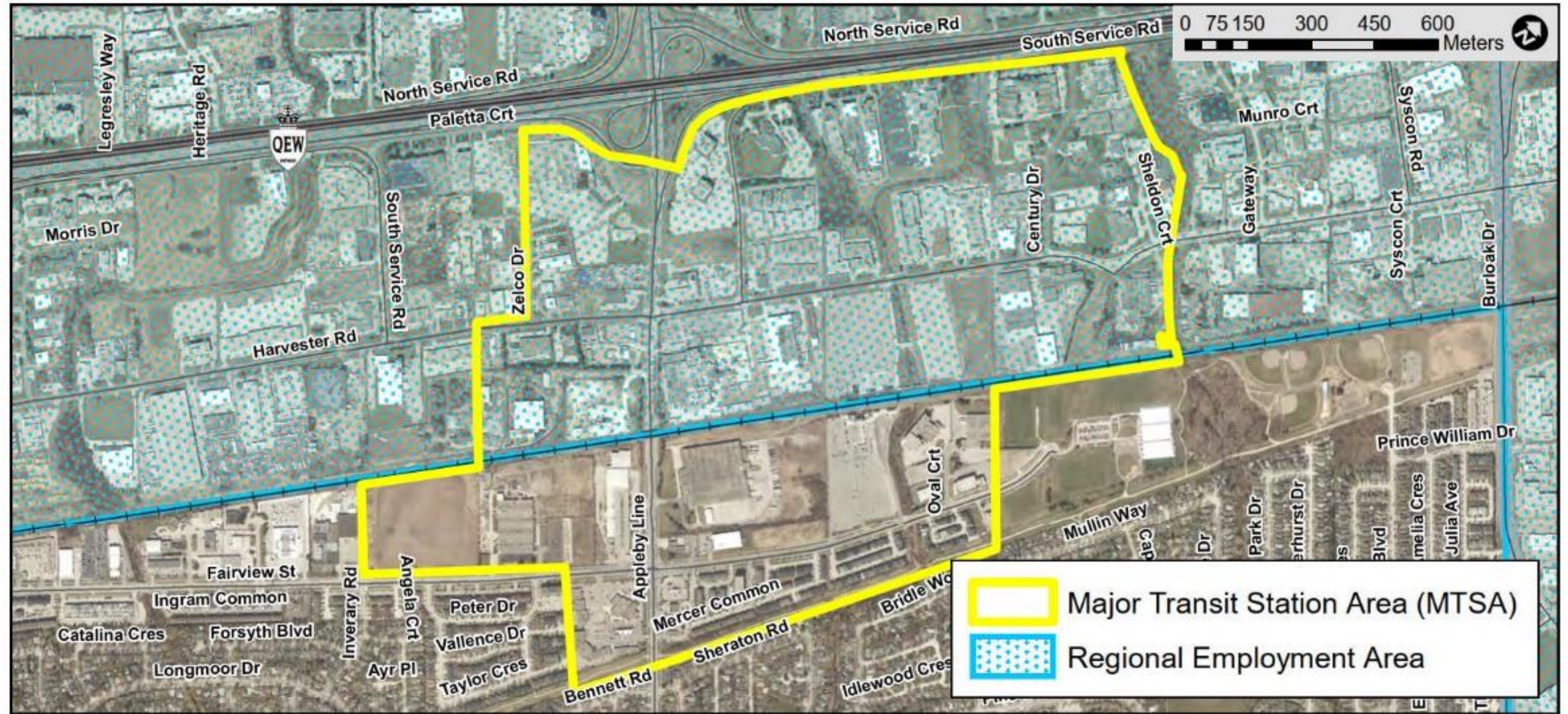


Figure 30: Land Use – Downtown Urban Centre (Burlington OP 2020 - Schedule D - Interim Working Version, February 2021)

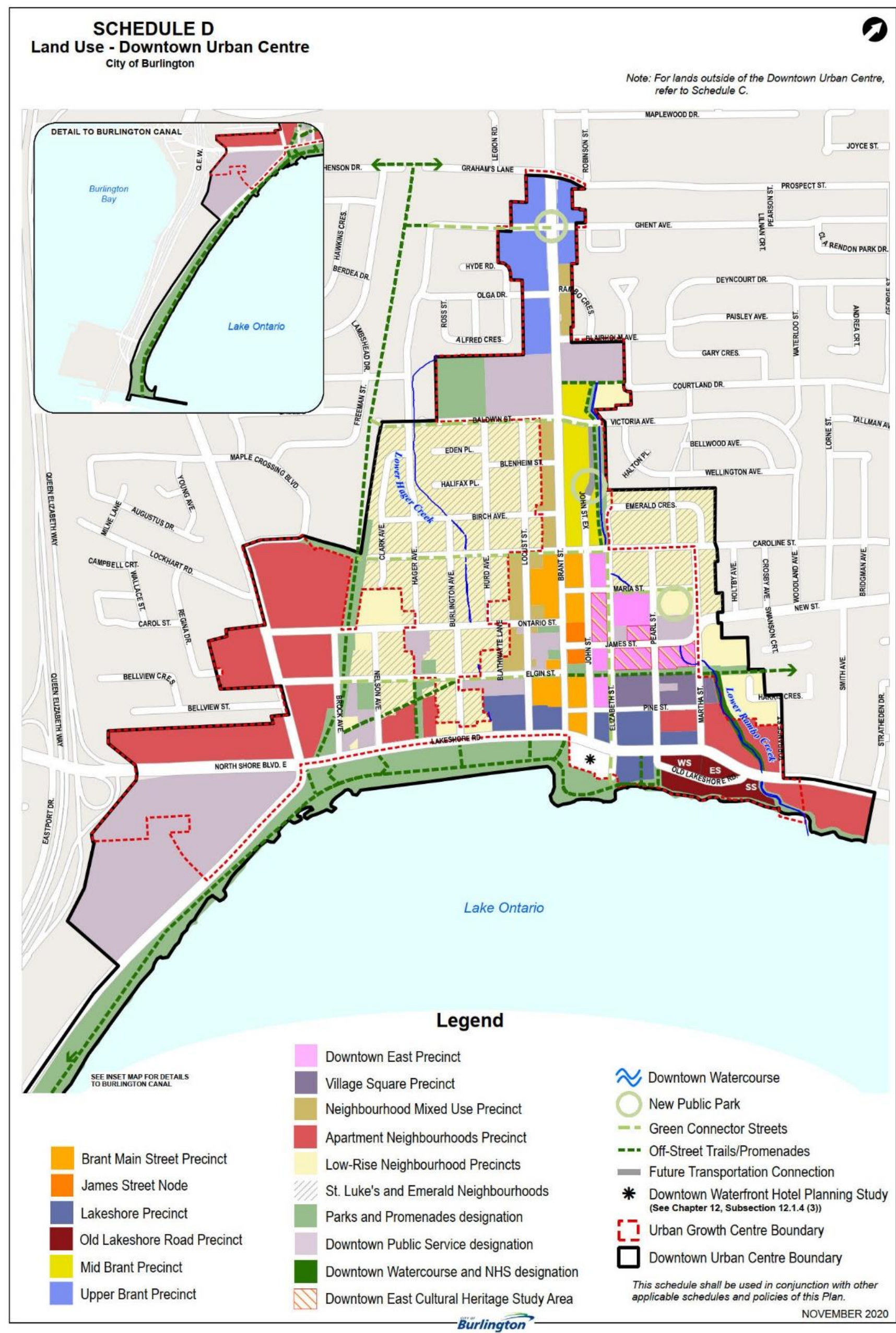


Figure 31: Downtown Urban Centre – Maximum Building Heights (Burlington OP 2020 - Schedule D-2 – Interim Working Version, February 2021)

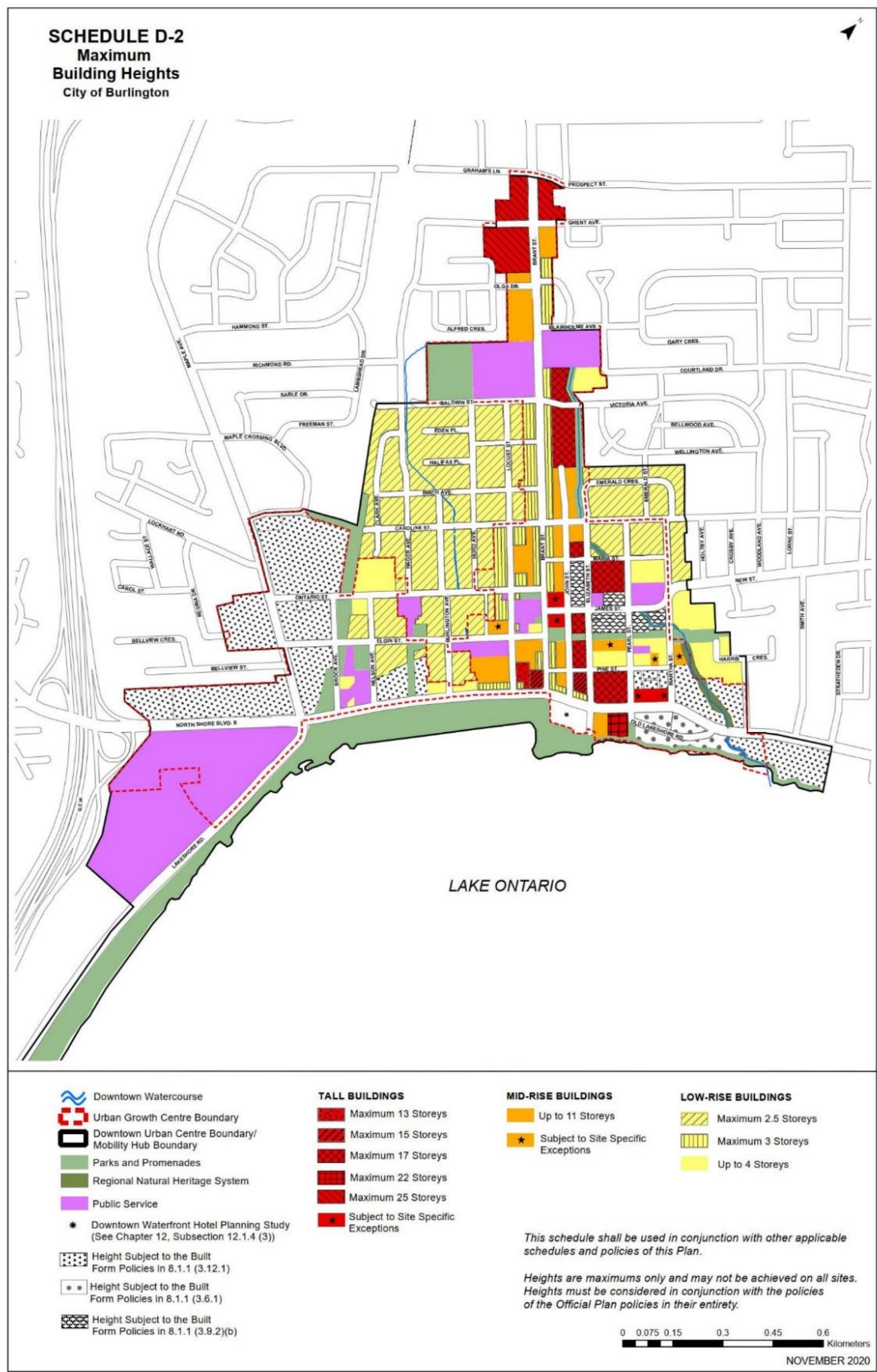
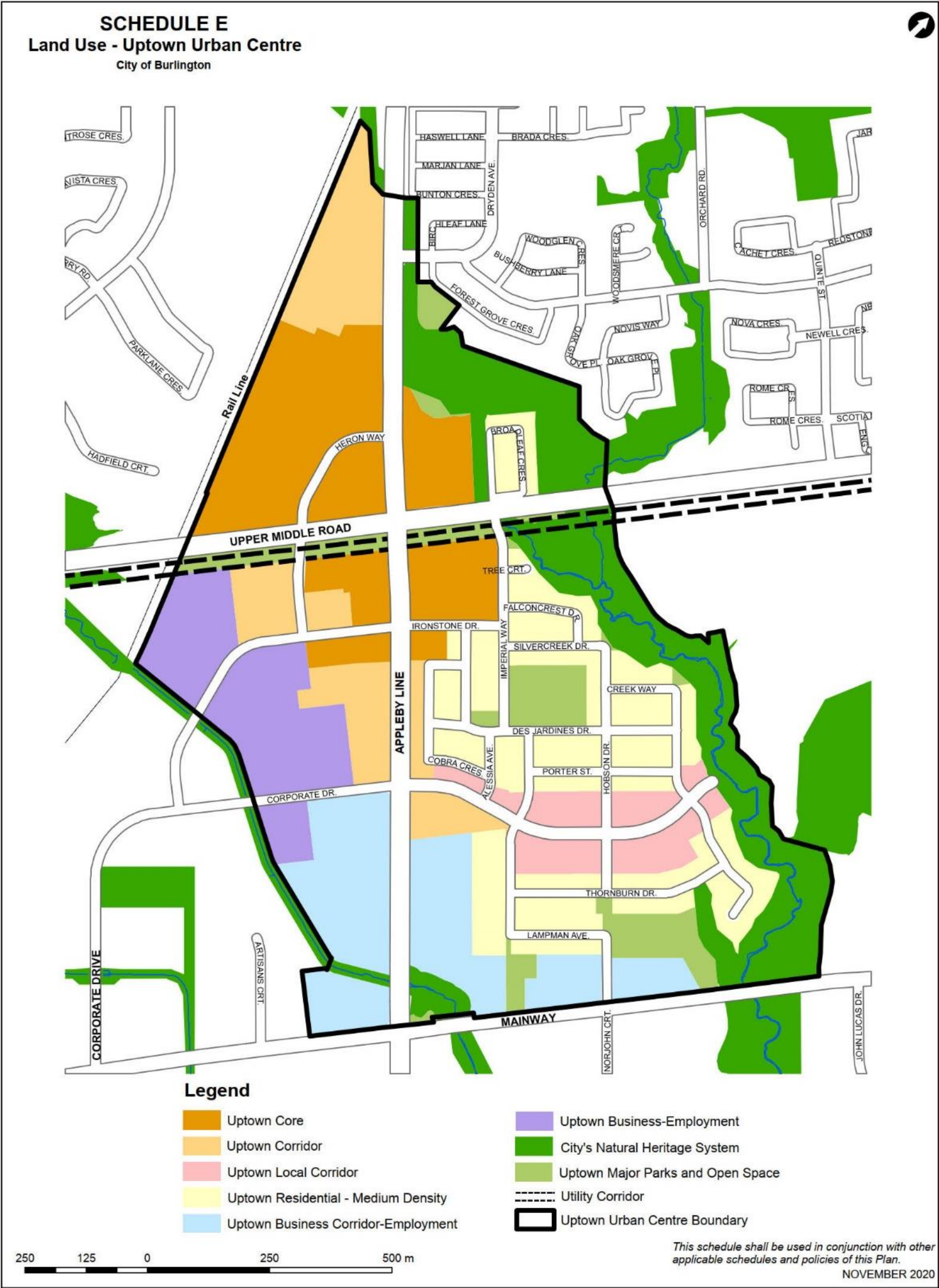


Figure 32: Land Use - Uptown Urban Centre (Burlington OP 2020 - Schedule E – Interim Working Version, February 2021)



8.11

Future Fire Suppression Scenarios

The change in performance for the BFD as presented in **Section 8.9.3.4**, highlights decreasing travel speed, low initial arriving company and low initial full alarm assignment emergency response deployment capabilities. When this is coupled with the considerations of future growth, particularly the higher density development being proposed, this has implications for improving the response capabilities for the municipality. This section evaluates future fire suppression options (Scenarios) that include alternative arrangements of staffing, deployment, and station location to help improve the response capabilities of the municipality, cognizant of the planned growth and the proposed performance targets. The following sections present future fire suppression scenarios for consideration. These scenarios are:

- Scenario #2: Future Do Nothing
- Scenario #3: Relocate or Renovate Station 3
- Scenario #4: Relocate Station 4
- Scenario #5: Proposed Station 9, Increase Station 1 Staffing
- Scenario #6: Proposed Station 9, Relocate Station 4, Proposed Station 10
- Scenario #7: Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing
- Scenario #8: Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing

These future scenarios are applied to the proposed performance targets for the urban area only. Strategies to enhance existing capabilities in the rural area is discussed in **Section 8.12**.

8.11.1

Scenario #2: Future Do Nothing – Emergency Response Deployment Capability

As the City has transitioned to a “growing in place” approach to growth, no urban boundary expansions are anticipated over the horizon of this plan. Scenario #2 – Future Do Nothing and all future scenarios therefore include an application of the performance targets with the existing urban area with the addition of future roads as confirmed by the City.

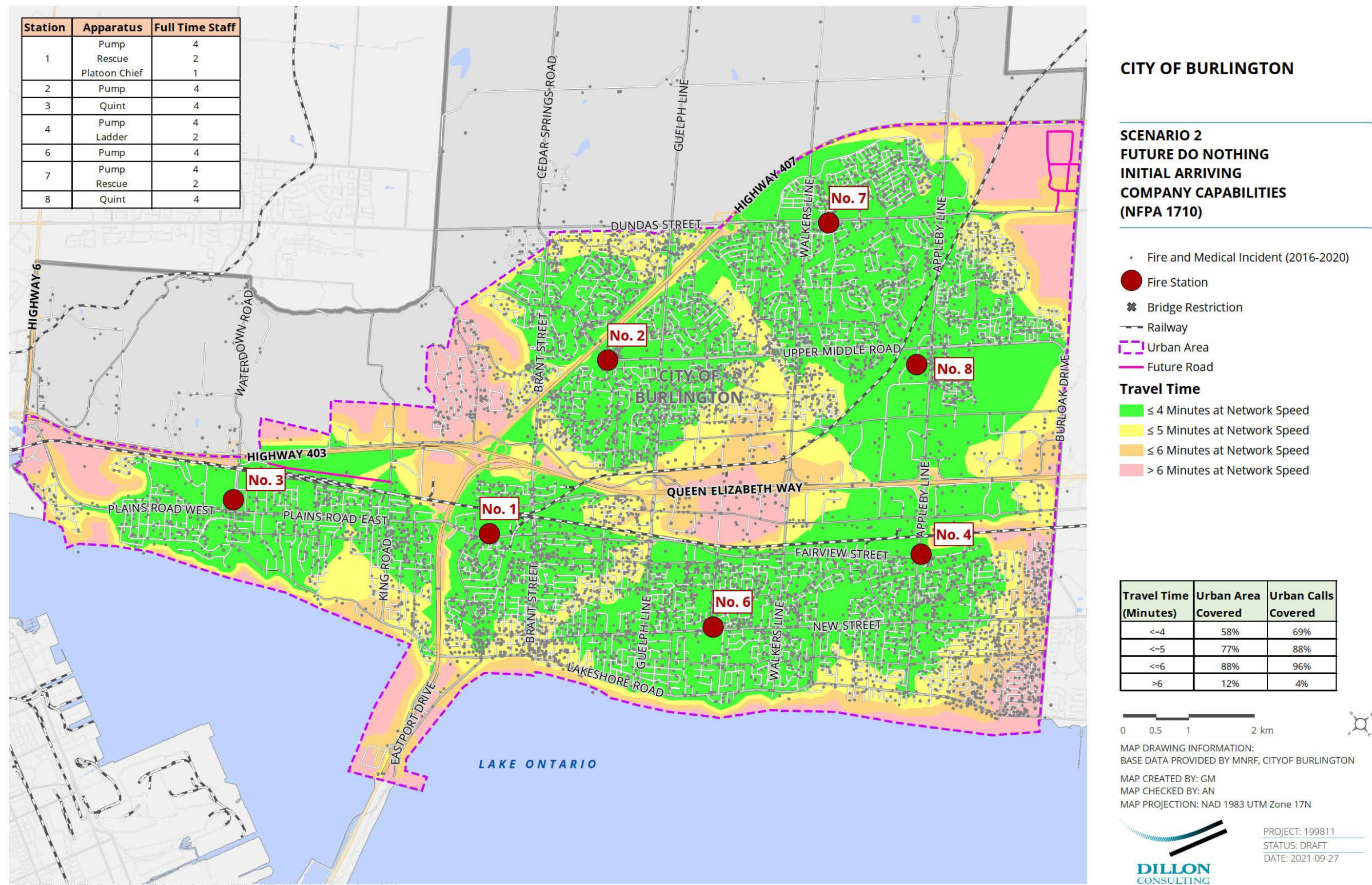
8.11.1.1

Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Future Do Nothing

Figure 33 illustrates the Future Do Nothing initial arriving company deployment capability. This illustrates that in a Future Do Nothing scenario, the BFD would be able to assemble four full-time firefighters on scene within a four minute travel time to 58% of urban area, and 69% of the historical urban area calls.

This is an expected outcome of this analysis as this does not include any changes to the urban area (geography) and the proportion of calls covered is based on historical calls, not potential future calls. Therefore, there is no change as compared to Scenario #1 – Existing Conditions in regards to initial arriving company capabilities.

Figure 33: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Future Do Nothing

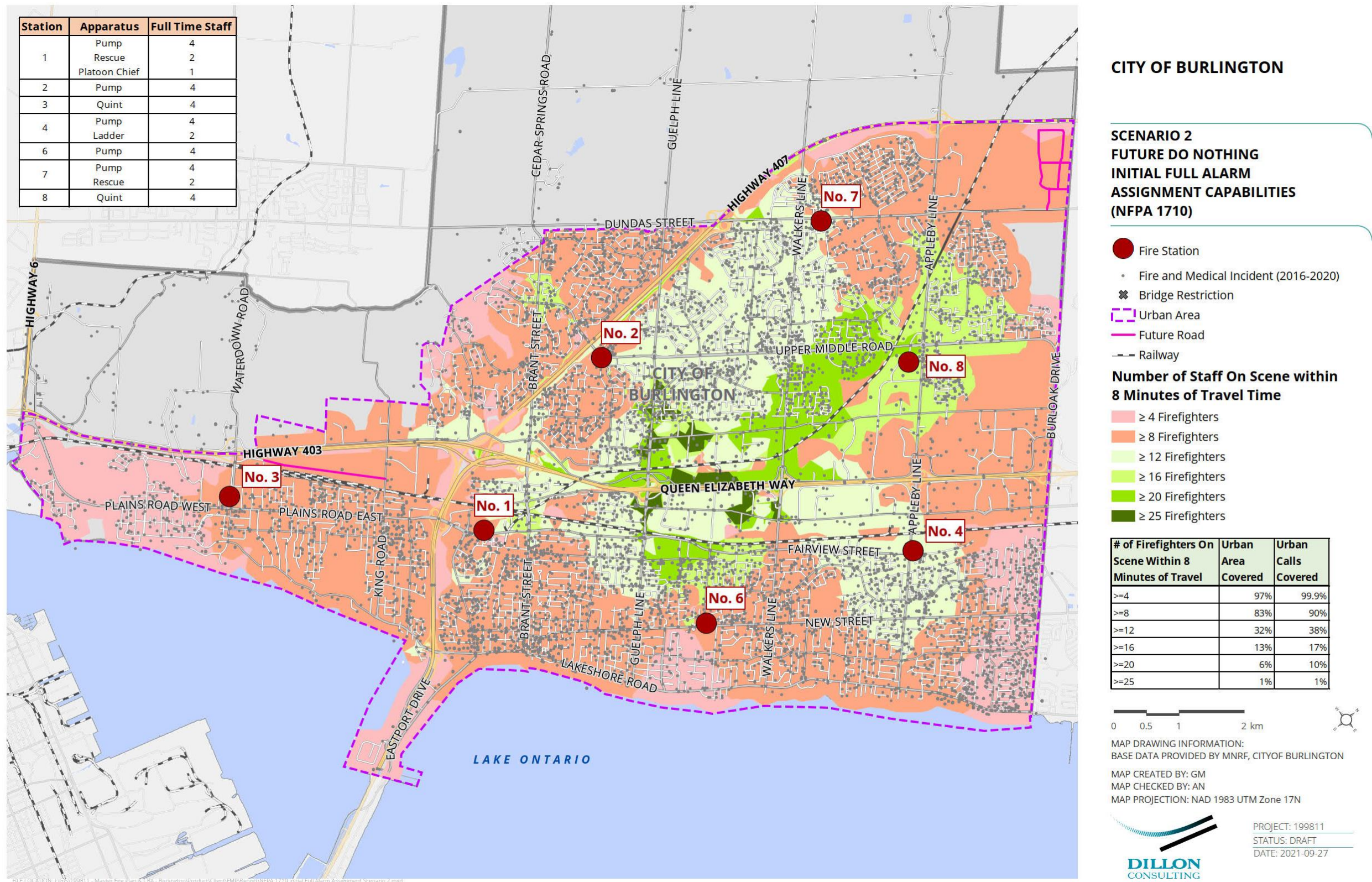


8.11.1.2 Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Future Do Nothing

Figure 34 illustrates the Future Do Nothing full alarm assignment deployment capability. The BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 13% of urban area, and 17% of the historical calls. The BFD would also be able to assemble 25 firefighters on scene within an eight minute travel time to 1% of the urban area and 1% of the historical urban calls.

This is an expected outcome of this analysis as this does not include any changes to the urban area (geography) and the proportion of calls covered is based on historical calls, not potential future calls. Therefore, there is no change as compared to Scenario #1 – Existing Conditions in regard to initial full alarm assignment capabilities.

Figure 34: Initial Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Future Do Nothing



8.11.1.3 Overview of Scenario #2 – Future Do Nothing

Table 30 illustrates a summary of the existing emergency response deployment capabilities of the BFD as compared to Scenario #2 – Future Do Nothing. Since we do not have emergency incidents associated with future calls, there is no difference in the calculated performance measures between the two scenarios. Where growth happens through either infill or greenfield development, the underlying response coverage is the same. Where we will see differentiation is in the scenarios where fire stations are added.

Table 30: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls

8.11.2 Scenario #3: Relocate Station 3 – Emergency Response Deployment Capability

Station 3 is nearing its end of life life-cycle and the 2016 Standards of Cover recommended assessing the location of Station 3. This scenario tests an alternative representative location for Station 3, with no other deployment changes.

8.11.2.1 Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Relocate Station 3

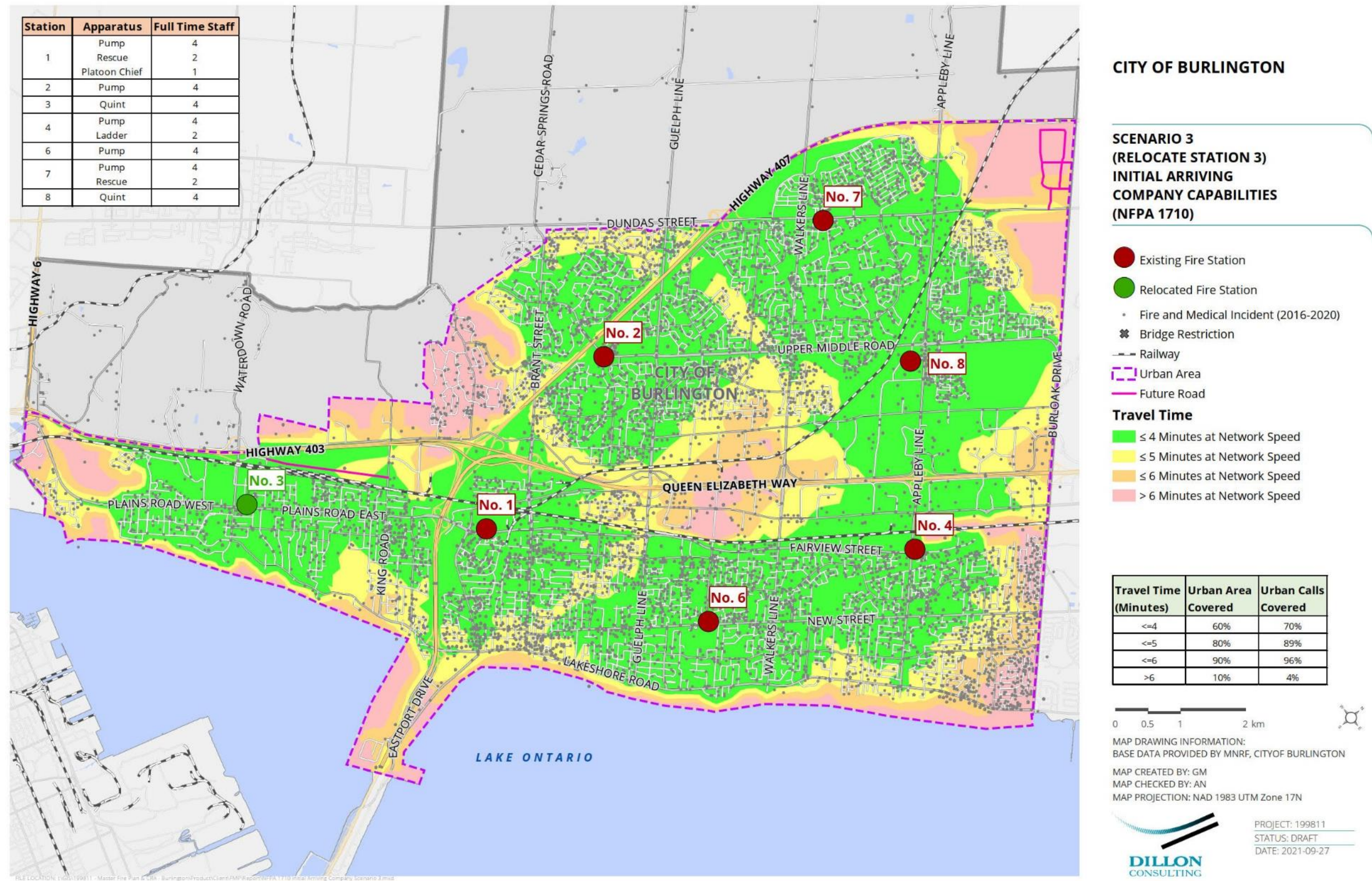
Figure 35 illustrates the effect of relocating Station 3. Using a representative location in the vicinity of Waterdown Road and Plains Road for a relocated Station 3, the BFD would be able to assemble four full-time firefighters on scene within a four minute travel time to 60% of urban area, and 70% of the historical urban area calls. This reflects

a very modest improvement over the capabilities presented as part of Future Do Nothing scenario.

Prior to the relocation and reconstruction of Station 3, a suitable site will need to be identified and potentially acquired. Since there is little difference between the location of the existing site and any proposed representative site near Waterdown Road and Plains Road, the existing Station 3 location was used for all other future scenarios tested in this FMP.

If a new site cannot be located on available land, the BFD can explore renovating or rebuilding on the same site. There is planned growth in the vicinity of the site. The BFD should monitor the timing and nature of the development. There may be a need to add an additional staffed front line vehicle the future.

Figure 35: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Relocate Station 3

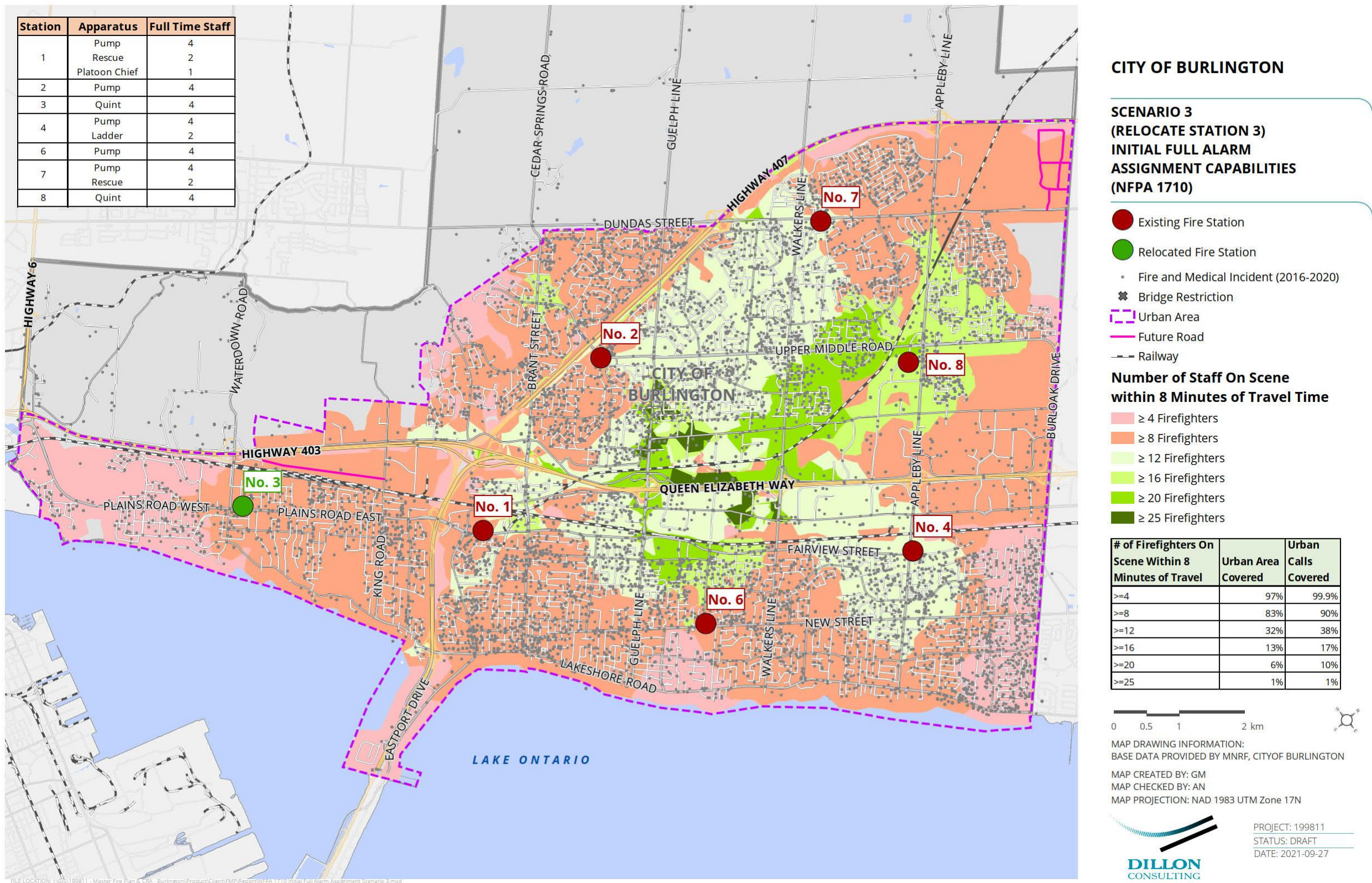


8.11.2.2 Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Relocate Station 3

Figure 36 illustrates the effect of relocating Station 3. Using a representative location in the vicinity of Waterdown Road and Plains Road for a relocated Station 3, the BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 13% of urban area, and 17% of the historical calls. The BFD would also be able to assemble 25 firefighters on scene within an eight minute travel time to 1% of the urban area and 1% of the historical urban calls.

This reflects no change over the capabilities presented as part of Future Do Nothing suggesting a robust location for Station 3 in this area.

Figure 36: Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Relocate Station 3



Overview of Scenario #3 - Relocate Station 3

Table 31 illustrates a summary of the existing emergency response deployment capabilities of the BFD as compared to the existing conditions, Scenario #2 and Scenario #3.

This analysis indicates that the general location of Station 3 in the vicinity of Waterdown Road and Plains Road is a robust location regarding the performance for initial arriving company and initial full alarm assignment to serve the western area of the municipality as well as the Aldershot GO MTSA. It is recommended that City of Burlington identify and acquire a suitable site in the vicinity of Waterdown Road and Plains Road for the purpose of relocating and reconstructing Station 3. Alternatively, renovating or rebuilding on the existing site could be investigated. The BFD should be a key stakeholder as part of the Aldershot GO MTSA Area-Specific Planning Project process currently being re-initiated by the City.

Additional future scenarios presented in this FMP are based on the existing location for Station 3.

Table 31: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-Scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #3	Relocate Station 3	60% of Area 70% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls

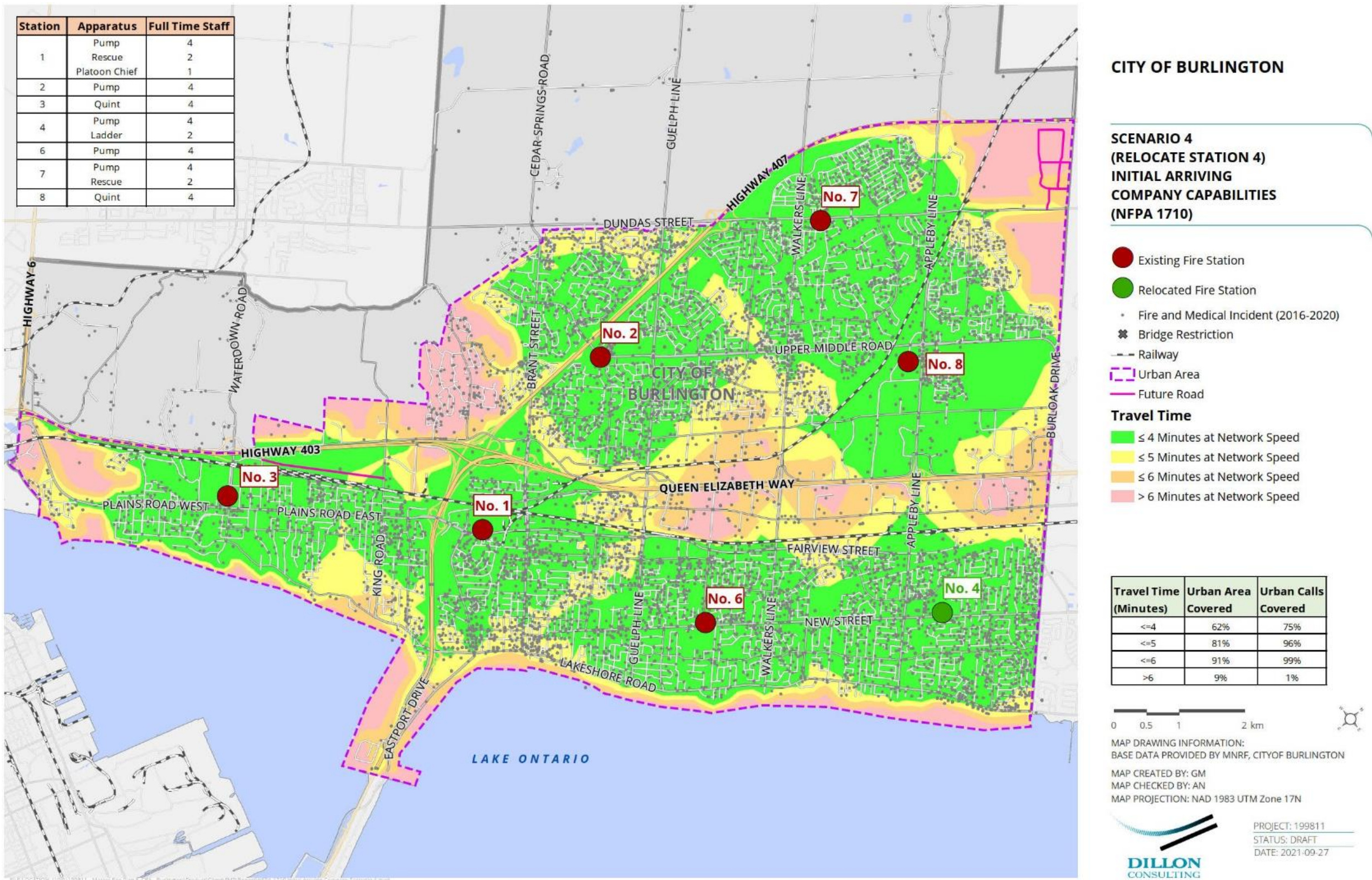
8.11.3 Scenario #4: Relocate Station 4 – Emergency Response Deployment Capability

There are portions of the southeast corner of the municipality that currently cannot be reached within four minutes of travel time. The 2007 Fire Master Plan Update and 2016 Standards of Cover also recommended assessing the location of Station 4. This scenario tests an alternative representative location for Station 4, with no other deployment changes.

8.11.3.1 Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Relocate Station 4

Figure 37 illustrates the effect of relocating Station 4. Using a representative location along New Street west of Appleby for a relocated Station 4, the BFD would be able to assemble four full-time firefighters on scene within a four minute travel time to 62% of urban area, and 75% of the historical urban area calls. This reflects an improvement over the capabilities presented as part of Future Do Nothing. This is due to the shift of Station 4 to the south-east which increases coverage of an existing residential area. While this scenario increases coverage of existing risk, it moves Station 4 further from the Appleby GO MTSA which is an area slated for growth with a range of built form and densities expected.

Figure 37: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Relocate Station 4

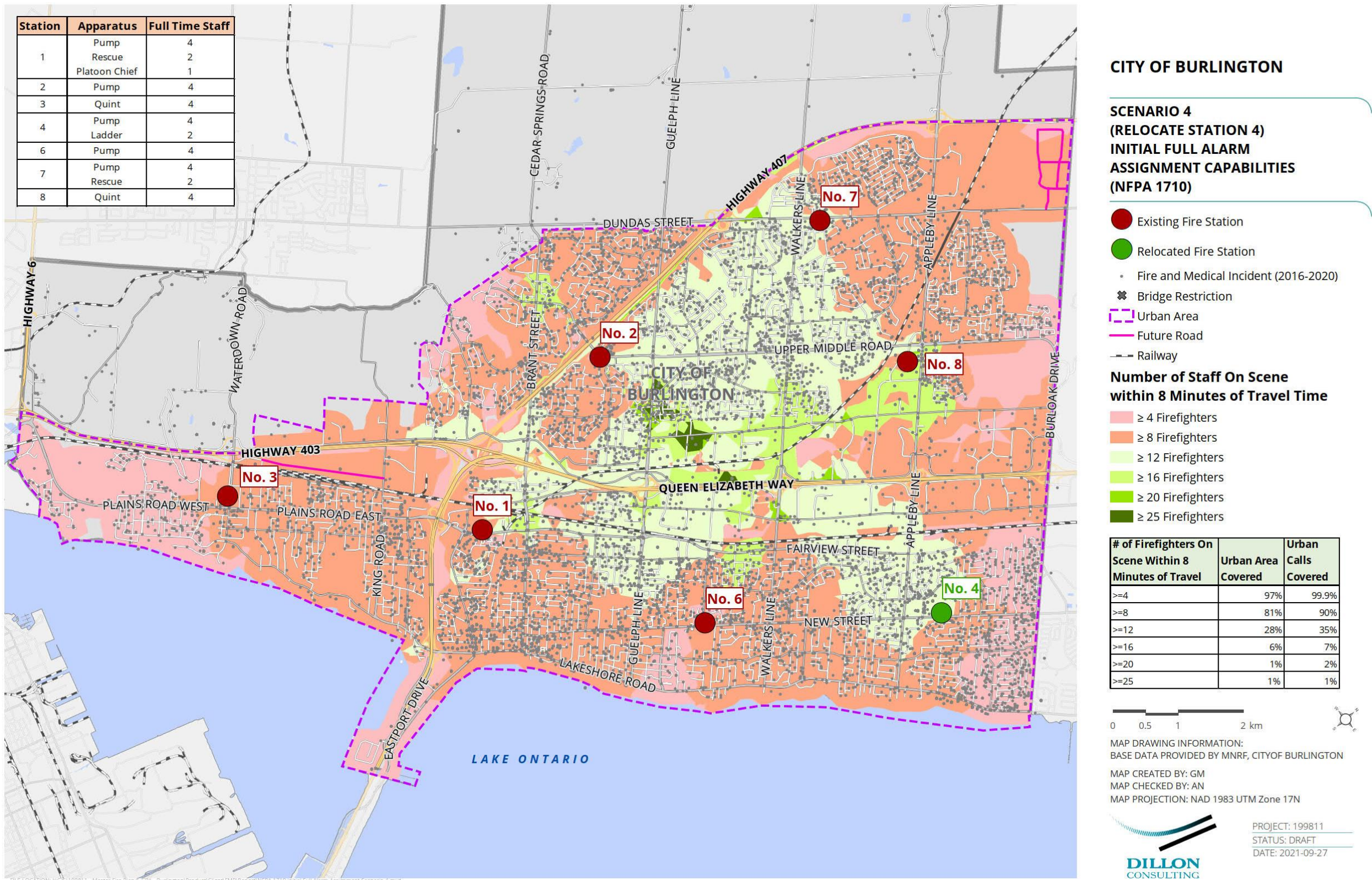


8.11.3.2 Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Relocate Station 4

Figure 38 illustrates the results of a relocated Station 4 on initial full alarm assignment capabilities. In this scenario, the BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 6% of urban area, and 7% of the historical calls.

Moving Station 4 to the southwest results in decreased performance for the initial full alarm assignment capabilities. A fire apparatus would have further to travel to reach areas of the municipality with overlapping eight minute response areas where the BFD has the ability to assemble 16 firefighters.

Figure 38: Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Relocate Station 4



8.11.3.3

Overview of Scenario #4 - Relocate Station 4

This analysis indicates that relocating Station 4 to the south-west will improve initial arriving company response capabilities as compared to the performance target; however, it will decrease the initial full alarm assignment capabilities and move Station 4 away from the Appleby GO MTSA.

Based on these results, we would not recommend relocating Station 4 on its own. There is an opportunity to enhance the use of a fire protection agreement with the Town of Oakville in support of both initial response and depth of response recognizing the location of Oakville Fire Department Station 1.

Table 32 illustrates a summary of the emergency response deployment capabilities for all scenarios presented so far.

Table 32: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-Scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #3	Relocate Station 3	60% of Area 70% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #4	Relocate Station 4	62% of Area 75% of Calls	6% of Area 7% of Calls	1% of Area 1% of Calls

8.11.4

Scenario #5: Proposed Station 9, Increase Station 1 Staffing – Emergency Response Deployment Capability

The 2016 Standards of Cover recommended the addition of a Station 9 in the downtown. This was also identified in the 2007 BFD Fire Master Plan Update as a likely future need related to the growth in high-rise high-risk occupancies. This scenario tests the addition of a Station 9, at a representative location, as well as an increase to the Rescue vehicle staffing in Station 1 to four firefighters instead of two. This results in staffing two full crews at Station 1.

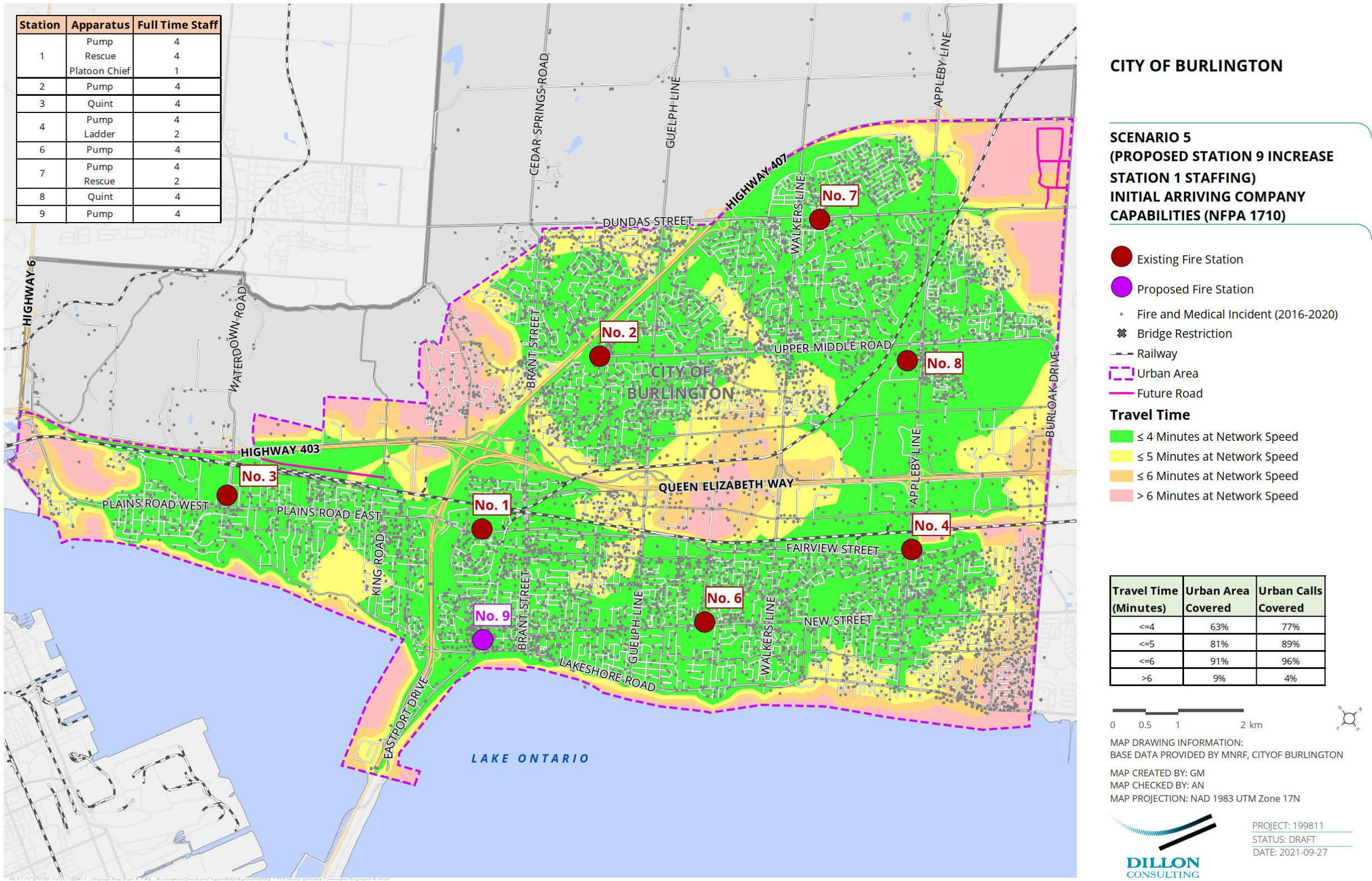
In the iterative process of testing scenarios, with the addition of only a Proposed Station 9 downtown (and no other change), the performance as compared to initial arriving company capabilities increased by 8% to 77%. However, the initial full alarm assignment capabilities saw a more modest increase of 5% (to 22%). With the need to try and achieve a bigger improvement for the initial full alarm assignment capabilities based on the risk, Scenario 5 also includes the addition of staff to Station 1.

8.11.4.1

Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Increase Station 1 Staffing

Figure 39 illustrates the effect of adding a Proposed Station 9 in the Downtown and increasing staffing at Station 1 to full crews on both the Pump and the Rescue. Using a representative location in the vicinity of Brock Avenue and Elgin Street for a new proposed Station 9, the BFD would be able to assemble four full-time firefighters on scene within a four minute travel time to 63% of urban area, and 77% of the historical urban area calls. This reflects an improvement over the capabilities presented as part of Future Do Nothing. Part of this improvement is due to the volume of calls in the Downtown that would be covered as part of initial response.

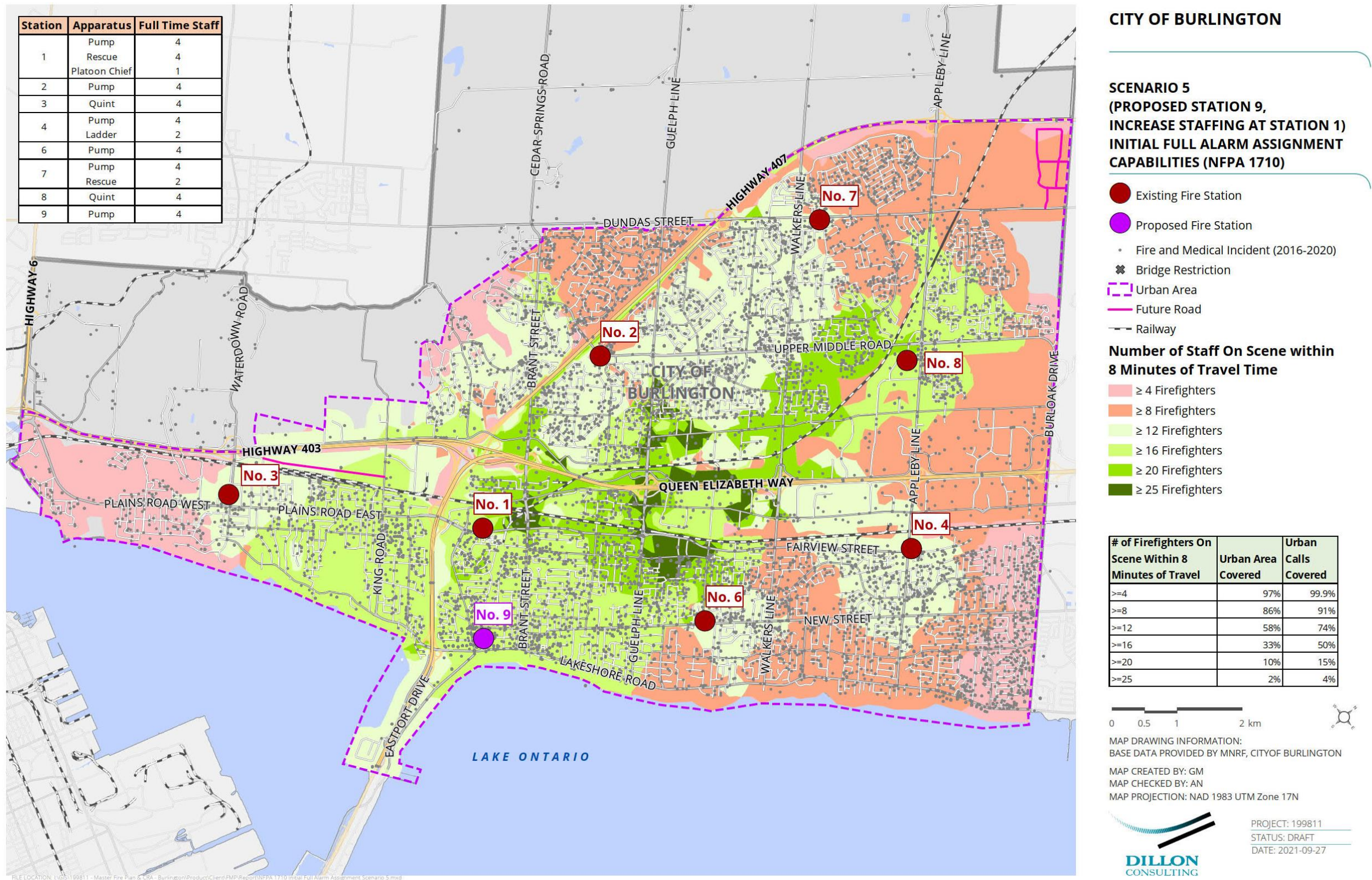
Figure 39: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Increased Station 1 Staffing



8.11.4.2 Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Proposed Station 9, Increase Station 1 Staffing

Figure 40 illustrates the results of a proposed Station 9 downtown and increased Station 1 staffing on initial full alarm assignment capabilities. In this scenario, the BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 33% of urban area, and 50% of the historical calls. This is a notable improvement as compared to Future Do Nothing (13% and 17% respectively).

Figure 40: Initial Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Increased Station 1 Staffing



8.11.4.3

Overview of Scenario #5 - Proposed Station 9, Increase Station 1 Staffing

This analysis indicates that the addition of a ninth station to the Downtown and increased staffing at Station 1 will result in improvements in both initial arriving company and initial full-alarm assignment capabilities as compared to the proposed urban area performance targets. This scenario responds to the existing risk in the Downtown as well as the potential for future growth in the area including the Burlington GO Station MTSA/Urban Growth Centre.

This scenario would require an additional 28 full-time firefighters in order to increase on-duty staffing by six full-time firefighters per shift (eight to increase the staff on the Rescue in Station 1 and 20 to staff the apparatus in new Station 9).

Building a new Station 9 would require the municipality to identify and acquire a site in the downtown area. This may be an expensive and difficult task. To mitigate this, a site that can accommodate a minimum of one bay and quarters for one crew may reduce the size of site required or possibly allow for some co-location with other uses.

Table 33 illustrates a summary of the emergency response deployment capabilities all scenarios presented so far.

Table 33: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #3	Relocate Station 3	60% of Area 70% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-Scene in 8 min. or less 90% of the time)
Scenario #4	Relocate Station 4	62% of Area 75% of Calls	6% of Area 7% of Calls	1% of Area 1% of Calls
Not Applicable	Proposed Station 9	63% of Area 77% of Calls	16% of Area 22% of Calls	2% of Area 4% of Calls
Scenario #5	Proposed Station 9, Increase Station 1 Staffing	63% of Area 77% of Calls	33% of Area 50% of Calls	2% of Area 4% of Calls

8.11.5

Scenario #6: Proposed Station 9, Relocate Station 4, Proposed Station 10 – Emergency Response Deployment Capability

Scenario #4 illustrated the improvements in emergency response deployment capability in the southeast area of the City. However, this scenario moved the existing station away from the identified growth area. Scenario #6 assesses the opportunity to relocate Station 4 and address some of the future growth needs by adding a Proposed Station 10, in addition to the Proposed Station 9 Downtown.

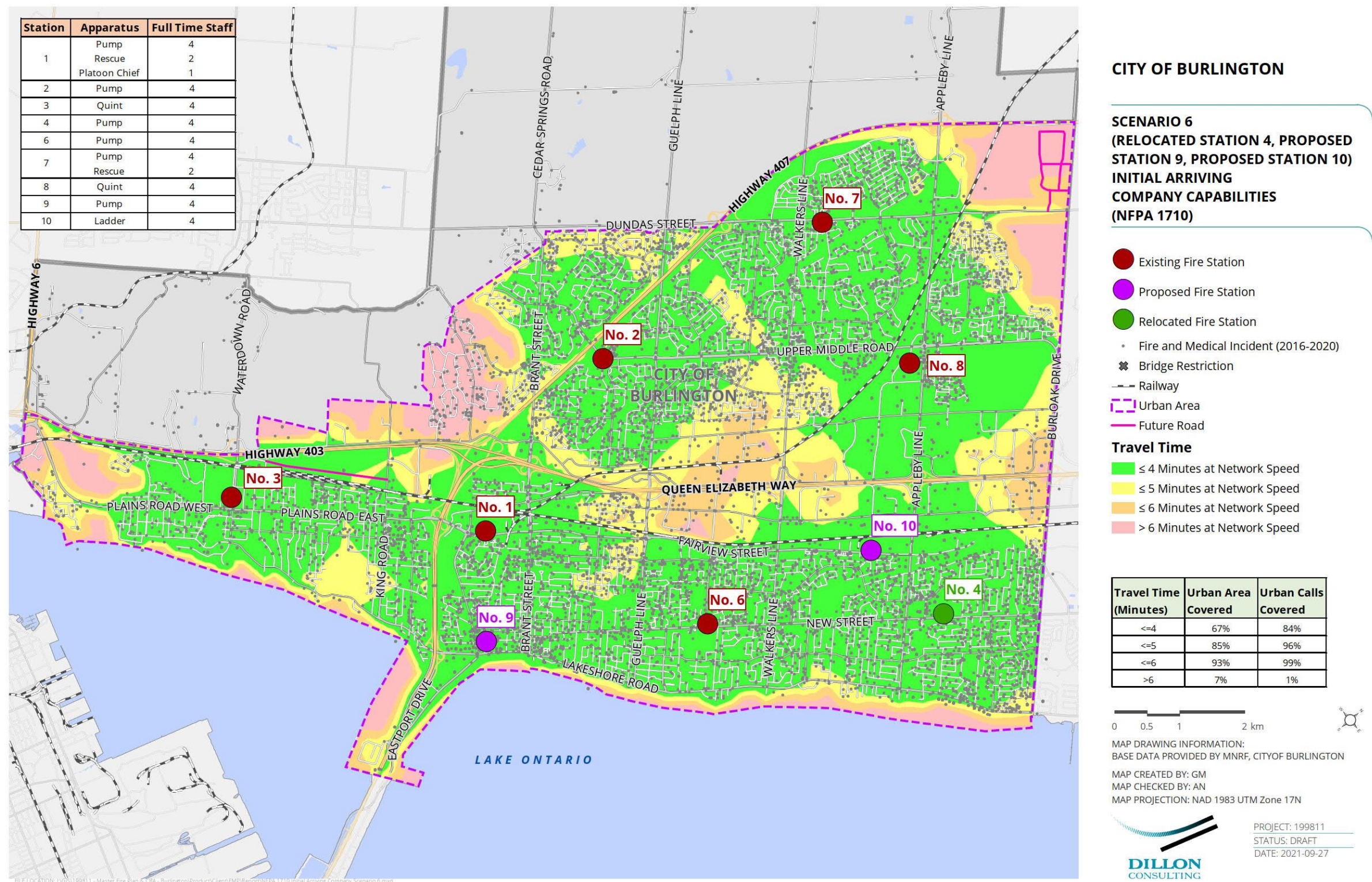
This scenario adds full-time resources to staff Station 9 downtown with four full-time firefighters, and adds staff to the existing aerial at Station 4 and relocates it to the Proposed Station 10. This results in a full crew in each of Station 4 and proposed Stations 9 and 10. This scenario would require an additional 28 full-time firefighters in order to increase on-duty staffing by six full-time firefighters, eight to increase the staffing on the aerial for Station 10 and 20 firefighters to staff the apparatus in Station 4.

8.11.5.1

Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Relocate Station 4, Proposed Station 10

Figure 41 illustrates the effect of adding a Proposed Station 9, relocating Station 4, and adding a Proposed Station 10 with the staffed aerial from Station 4. Using a representative location along Fairview Street between Walkers Line and Appleby Line for a new proposed Station 10, the BFD would be able to assemble four full-time firefighters on scene within a four minute travel time to 67% of urban area, and 84% of the historical urban area calls. This reflects a significant improvement over the capabilities presented as part of Future Do Nothing (58% and 69% respectively). Part of this improvement is due to the volume of calls in the Downtown as well as those existing calls in the southeast that would be covered as part of initial response.

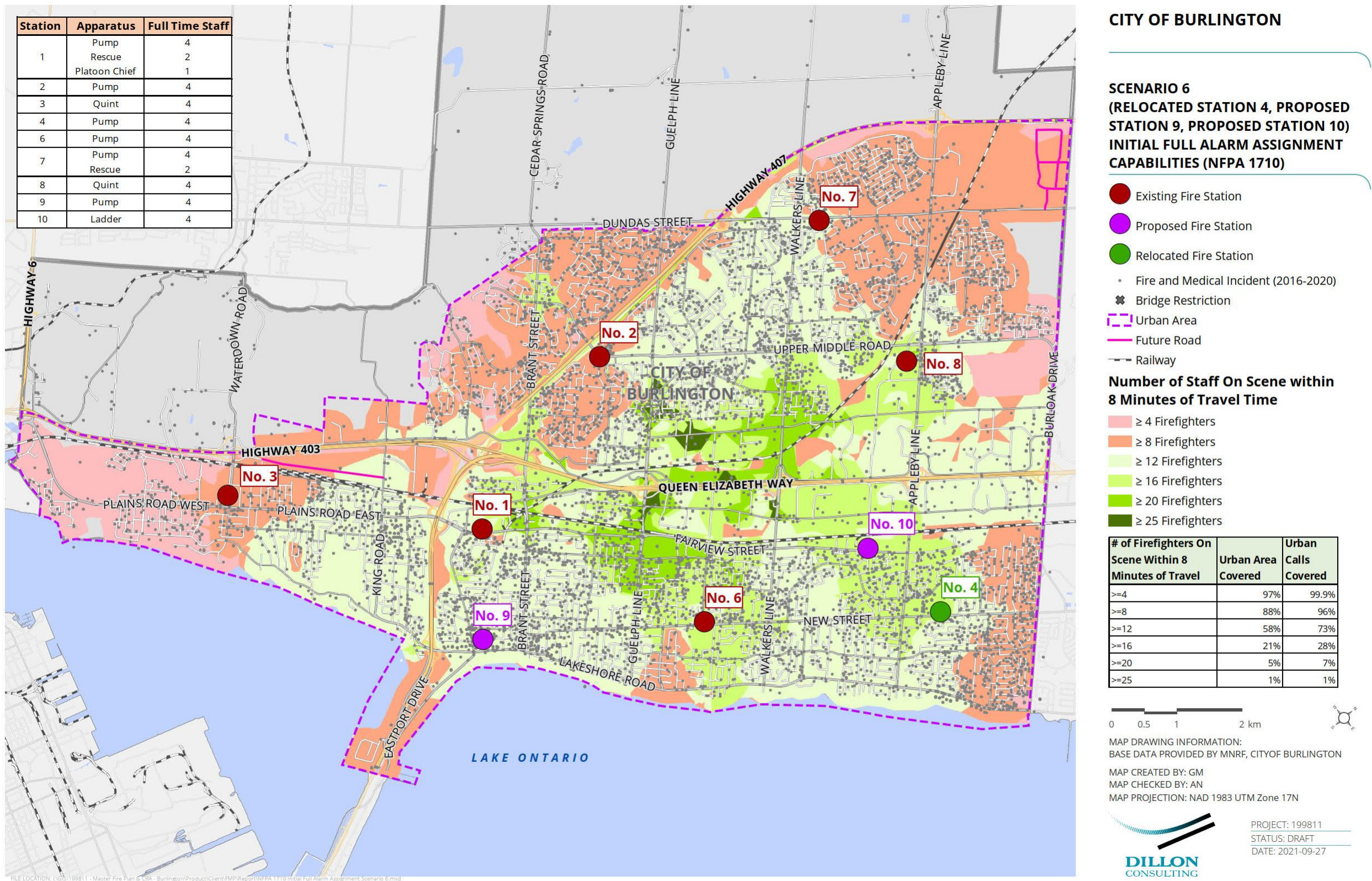
Figure 41: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) - Proposed Station 9, Relocate Station 4, Proposed Station 10



8.11.5.2 Initial Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Proposed Station 9, Relocate Station 4, Proposed Station 10

Figure 42 illustrates the results of this scenario on initial full alarm assignment capabilities. In this scenario, the BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 21% of urban area, and 28% of the historical calls. This is an improvement as compared to Future Do Nothing (13% and 17% respectively).

Figure 42: Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Relocate Station 4, Proposed Station 10



8.11.5.3

Overview of Scenario #6 - Proposed Station 9, Relocate Station 4, Proposed Station 10

This analysis indicates that the addition of a ninth station to the Downtown, relocating Station 4, and adding a Proposed Station 10 with the aerial from Station 4 staffed with four firefighters will result in improvements in both initial arriving company and full-alarm assignment capabilities as compared to the existing conditions for the proposed urban area performance targets. This scenario responds to the existing risk in the Downtown and southeast area of the City as well as the potential for future growth in the area including the Burlington GO Station MTSA/Urban Growth Centre and Appleby GO Station MTSA.

This scenario would require an additional 28 full-time firefighters in order to increase on-duty staffing by six full-time firefighters per shift.

Building a new Station 9, Station 4 and Station 10 would require the municipality to identify and acquire sites in the downtown area, in the area west of Appleby Line along New Street Road, and along Fairview Street between Appleby Line and Walkers Line. To identify, acquire, and build a fire station on numerous sites in existing built up areas will take considerable planning in addition to the need to develop a financial strategy and taking a creative and progressive approach to station design. Opportunities for co-locating with other uses should be considered where appropriate.

Table 34 illustrates a summary of the emergency response deployment capabilities all scenarios presented so far.

Table 34: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-Scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #3	Relocate Station 3	60% of Area 70% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #4	Relocate Station 4	62% of Area 75% of Calls	6% of Area 7% of Calls	1% of Area 1% of Calls
Not Applicable	Proposed Station 9	63% of Area 77% of Calls	16% of Area 22% of Calls	2% of Area 4% of Calls
Scenario #5	Proposed Station 9, Increase Station 1 Staffing	63% of Area 77% of Calls	33% of Area 50% of Calls	2% of Area 4% of Calls
Scenario #6	Proposed Station 9, Relocate Station 4, Proposed Station 10	67% of Area 84% of Calls	21% of Area 28% of Calls	1% of Area 1% of Calls

8.11.6

Scenario #7: Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing – Emergency Response Deployment Capability

This scenario explores the impacts in emergency response deployment capability by relocating Station 4, adding a Proposed Station 10 with a fully staffed aerial from Station

4 (adding two on-duty firefighters), and increasing Station 1 and 7 staffing by two firefighters to fully staff the Rescue vehicles with four firefighters.

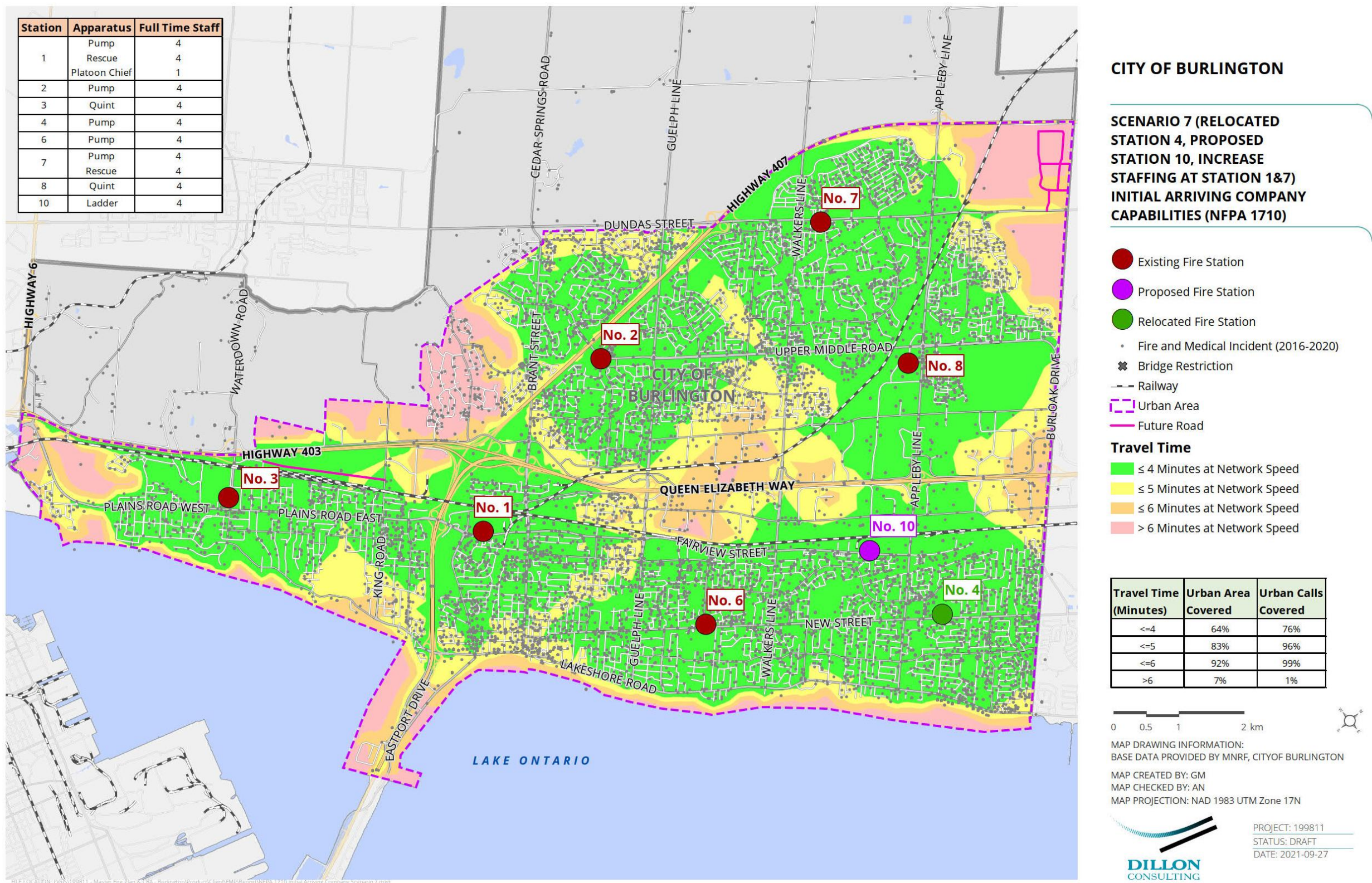
This scenario would require an additional 24 full-time firefighters in order to increase on-duty staffing by six full-time firefighters per shift.

8.11.6.1

Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing

Figure 43 illustrates initial arriving company capabilities of this scenario. The BFD would be able to assemble four full-time firefighters on scene within a four minute travel time to 64% of urban area, and 76% of the historical urban area calls. This reflects an improvement over the capabilities presented as part of Future Do Nothing (58% and 69% respectively). Part of this improvement is due to the volume of calls in the southeast area of the City.

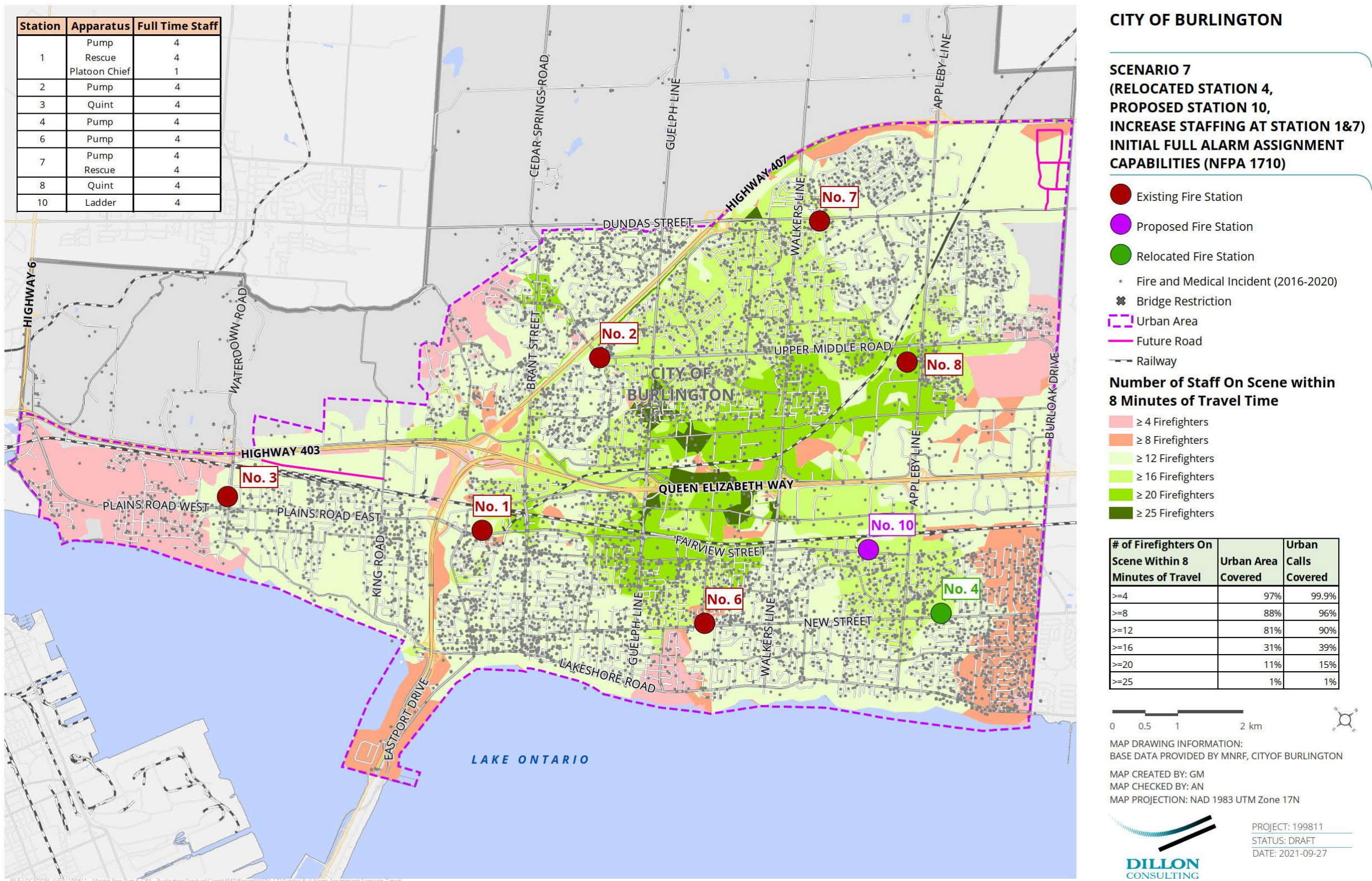
Figure 43: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) - Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing



8.11.6.2 **Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing**

Figure 44 illustrates the results of this scenario on initial full alarm assignment capabilities. In this scenario, the BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 31% of urban area, and 39% of the historical calls. This is an improvement as compared to Future Do Nothing (13% and 17% respectively).

Figure 44: Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing



8.11.6.3

Overview of Scenario #7 - Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing

This analysis indicates that relocating Station 4, and adding a Proposed Station 10 with increased staffing at Stations 1 and 7 will result in improvements in both initial arriving company and initial full-alarm assignment capabilities as compared to the existing conditions for the proposed urban area performance targets. This scenario responds to the existing risk in the Downtown and southeast area of the City as well as the potential for future growth in the area including the Burlington GO Station MTSA/Urban Growth Centre and Appleby GO Station MTSA.

In terms of resources, this scenario would require an additional 24 full-time firefighters in order to increase on-duty staffing by six full-time firefighters per shift. Eight firefighters each are for the two Rescue vehicles in Stations 1 and 7 and eight to increase the staffing on the aerial from Station 4 being relocated to Station 10.

Table 35 illustrates a summary of the emergency response deployment capabilities all scenarios presented so far.

Table 35: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (Min. 4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (min. 16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (min. 25 Firefighters Arriving On-scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #3	Relocate Station 3	60% of Area 70% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (Min. 4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (min. 16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (min. 25 Firefighters Arriving On-scene in 8 min. or less 90% of the time)
Scenario #4	Relocate Station 3	62% of Area 75% of Calls	6% of Area 7% of Calls	1% of Area 1% of Calls
Not Applicable	Proposed Station 9	63% of Area 77% of Calls	16% of Area 22% of Calls	2% of Area 4% of Calls
Scenario #5	Proposed Station 9, Increase Station 1 Staffing	63% of Area 77% of Calls	33% of Area 50% of Calls	2% of Area 4% of Calls
Scenario #6	Proposed Station 9, Relocate Station 4, Proposed Station 10	67% of Area 84% of Calls	21% of Area 28% of Calls	1% of Area 1% of Calls
Scenario #7	Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing	64% of Area 76% of Calls	31% of Area 39% of Calls	1% of Area 1% of Calls

8.11.7

Scenario #8: Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing – Emergency Response Deployment Capability

This scenario explores the impacts in emergency response deployment capability by adding a Proposed Station 9 Downtown, relocating Station 4, adding a Proposed Station 10, and increasing Station 1 Staffing. This scenario adds staff to the existing aerial at Station 4 and relocates it to the Proposed Station 10. It also adds enough staff for two full crews at Station 1 (Rescue vehicle is staffed with four firefighters) and with four full-time firefighters at Station 9. This is an increase in the staffing of eight, bringing the

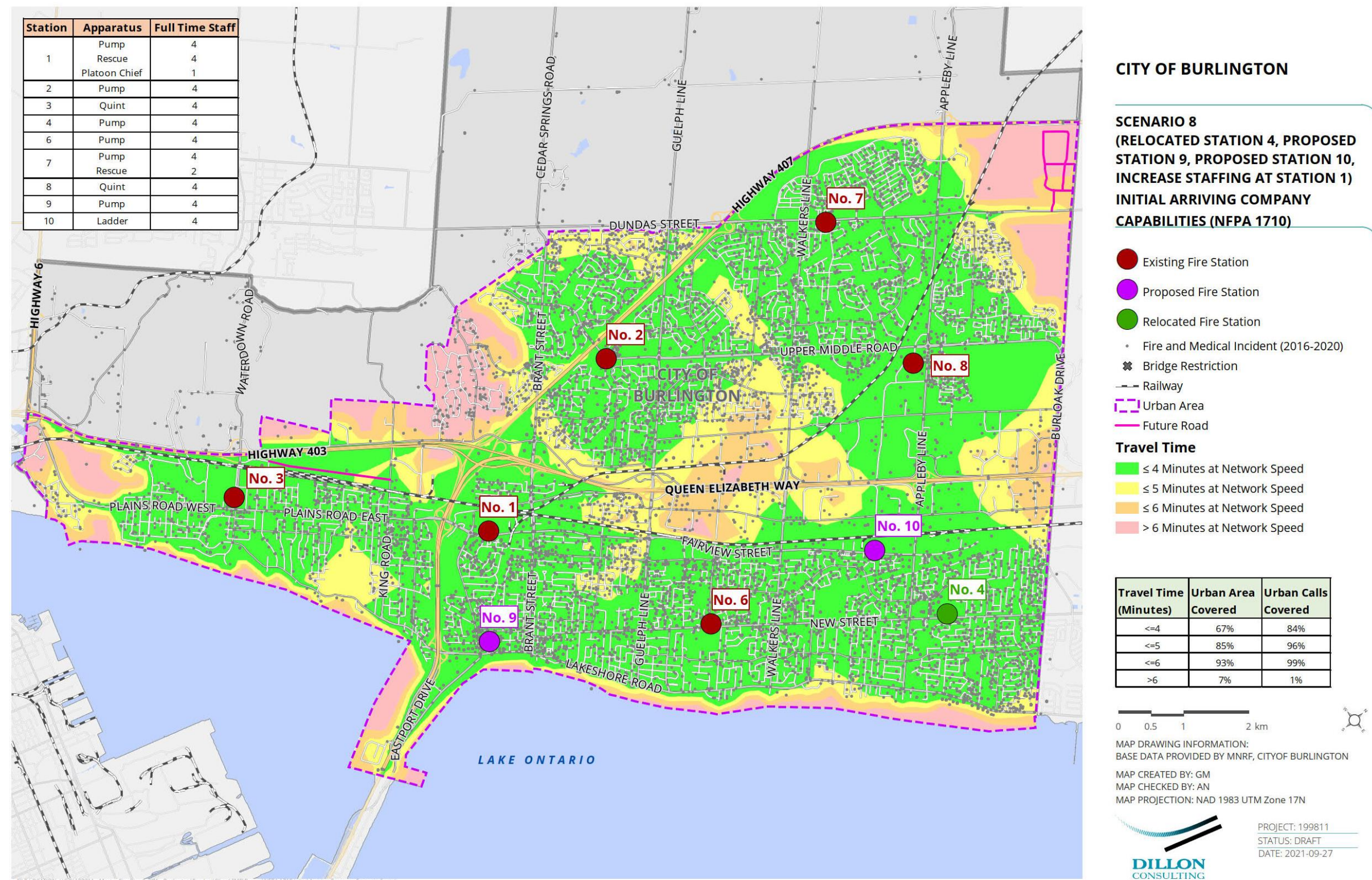
staffing on-duty for the BFD to 43 firefighters, sufficient for a full initial response to a high-rise, high risk occupancy.

8.11.7.1

Initial Arriving Company Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing

Figure 45 illustrates initial arriving company capabilities of this scenario. The BFD would be able to assemble a of four full-time firefighters on scene within a four minute travel time to 67% of urban area, and 84% of the historical urban area calls. This reflects an improvement over the capabilities presented as part of Future Do Nothing (58% and 69% respectively).

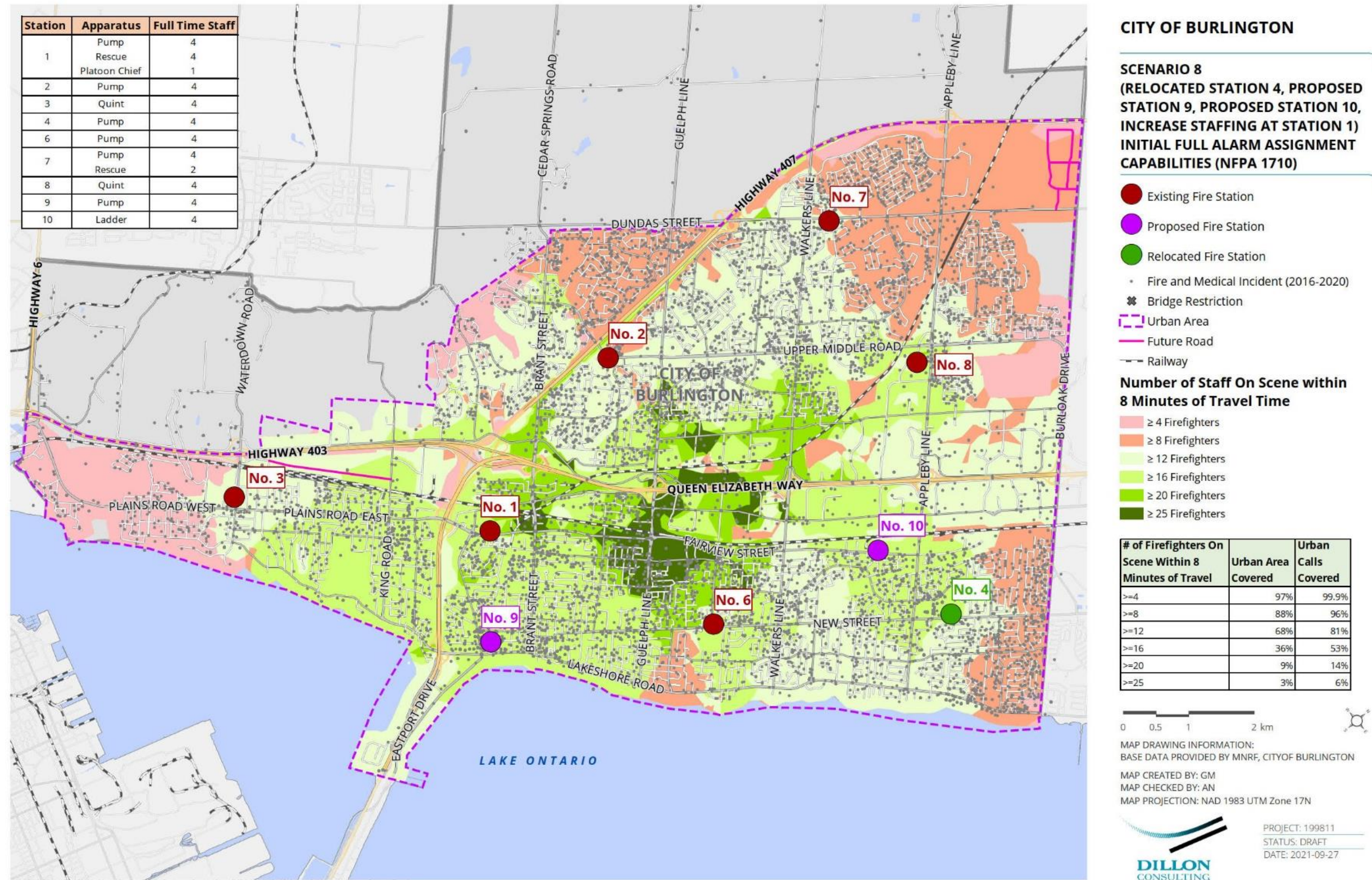
Figure 45: Initial Arriving Company Capabilities - Urban Area (NFPA 1710) - Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing



8.11.7.2 Initial Full Alarm Assignment Capabilities –Urban Area (NFPA 1710) – Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing

Figure 46 illustrates the results of this scenario on initial full alarm assignment capabilities. In this scenario, the BFD would be able to assemble 16 full-time firefighters on scene within an eight minute travel time to 36% of urban area, and 53% of the historical calls. This is an improvement as compared to Future Do Nothing (13% and 17% respectively). The BFD would also be able to assemble 25 firefighters on scene within an eight minute travel time to 3% of the urban area and to 6% of the historical calls.

Figure 46: Initial Full Alarm Assignment Capabilities - Urban Area (NFPA 1710) – Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing



8.11.7.3

Overview of Scenario #8 - Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing

This analysis indicates that adding a ninth and tenth station, relocating Station 4, proposed Station 10 and increasing Station 1 full-time fire suppression resources will result in improvements in both initial arriving company and initial full-alarm assignment capabilities as compared to the existing conditions for the proposed urban area performance targets. This scenario responds to the existing risk in the Downtown and southeast area of the City as well as the potential for future growth in the area including the Burlington GO Station MTSA/Urban Growth Centre and Appleby GO Station MTSA.

This scenario would require an additional 36 full-time firefighters in order to increase on-duty staffing by eight full-time firefighters per shift.

Table 36 illustrates a summary of the emergency response deployment capabilities all scenarios presented so far.

Table 36: Summary of Proposed Urban Area Fire Suppression Performance Targets

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-Scene in 8 min. or less 90% of the time)
Scenario #1	Existing Capabilities	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #2	Future Do Nothing	58% of Area 69% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #3	Relocate Station 3	60% of Area 70% of Calls	13% of Area 17% of Calls	1% of Area 1% of Calls
Scenario #4	Relocate Station 4	62% of Area 75% of Calls	6% of Area 7% of Calls	1% of Area 1% of Calls

Scenario	Emergency Response Deployment Model	Urban Area Initial Arriving Company (4 Firefighters Arriving On-scene in 4 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (16 Firefighters Arriving On-scene in 8 min. or less 90% of the time)	Urban Area Initial Full Alarm Assignment (25 Firefighters Arriving On-scene in 8 min. or less 90% of the time)
Not Applicable	Proposed Station 9	63% of Area 77% of Calls	16% of Area 22% of Calls	2% of Area 4% of Calls
Scenario #5	Proposed Station 9, Increase Station 1 Staffing	63% of Area 77% of Calls	33% of Area 50% of Calls	2% of Area 4% of Calls
Scenario #6	Proposed Station 9, Relocate Station 4, Proposed Station 10	67% of Area 84% of Calls	21% of Area 28% of Calls	1% of Area 1% of Calls
Scenario #7	Relocate Station 4, Proposed Station 10, Increase Station 1 and 7 Staffing	64% of Area 76% of Calls	31% of Area 39% of Calls	1% of Area 1% of Calls
Scenario #8	Proposed Station 9, Relocate Station 4, Proposed Station 10, Increase Station 1 Staffing	67% of Area 84% of Calls	36% of Area 53% of Calls	3% of Area 6% of Calls

8.12 Proposed Fire Suppression Strategy

The analysis in this suppression section has highlighted a number of challenges facing the BFD and assessed possible solutions related to station location, staffing, and deployment to addressing these challenges. This subsection summarizes those challenges and highlights a strategy to address them.

While the focus in this section is on suppression (emergency response), other sections in this report have focussed on the first two lines of defence as a strategic priority for the BFD. Public education and prevention, and fire safety standards and enforcement are a critical part of the three lines of defence, with emergency response being the third line of defence.

Analysis of the deployment model and total suppression staffing identified that the ratio of career on-duty staffing versus total suppression staffing is lower than recommended (i.e. a ratio of 1.25). BFD has a total suppression complement of 172 career firefighters whereas the recommended based on the 1.25 ratio is 180 firefighters. This level of staffing ensures that there are sufficient staff to maintain the staffing required for the assigned vehicles and that overtime costs can be managed and minimized.

The BFD is a composite department which includes volunteer firefighter complements at Station 1 and Station 5. The Station 1 volunteers perform a support function in the urban area, while the volunteers in Station 5 perform an emergency response role for the rural area. More discussion on the strategy for the volunteer firefighters is described below.

The 2016 Standards of Cover report identified that Station 3 is essentially at its end of life and Station 4 is nearing its end of life and both are in need of replacement and possible relocation.

Analysis of existing conditions identified that the initial arriving company emergency response capability has been declining in recent years, spurred by increasing congestion within the municipality and other policy initiatives. This has resulted in a lower than desirable initial arriving company response (i.e. 69%) when compared to the proposed performance targets. The identified areas for attention are the southeast part of the municipality, the downtown, and the employment area in the middle of the municipality centred on Harvester Road between Guelph Line and Walkers Line.

In a similar way, the initial full alarm assignment emergency response capability is far lower (i.e. 17%) when compared to proposed performance targets (i.e., 90%). At this level of response capability, improving the initial full alarm assignment capabilities is considered a priority. Other than an area in the centre of the municipality centred on Walkers Line, the ability to meet the proposed Single-Family Dwelling – Initial Full Alarm Assignment performance target of 16 firefighters in eight minutes of travel time is limited.

When considering planned growth for the municipality, a significant amount of population and employment growth is forecast to be accommodated through intensification in growth nodes and corridors including GO Station MTSA's. High-rise and other high-risk occupancies require even greater numbers of firefighters to meet the initial full alarm assignment staffing needs within the eight minute travel time parameter. For example, the staffing requirements for an open-air strip shopping centre or an apartment building (up to three storey, garden style) is 25 (or 26 if an aerial is used). For a high-rise occupancy, the full alarm assignment is 38 (39 if building is equipped with a fire pump).

The scenarios assessed in **Section 8.11** considered options for additional stations to help address the existing initial arriving company emergency response capability performance, as well as the existing initial full alarm assignment performance. Representative sites in the downtown, along Fairview Avenue, between Walkers Line and Appleby Line, and along New Street east of Appleby Line were identified and evaluated. The follow section summarizes the proposed strategies for fire suppression based on the analysis within this FMP.

8.12.1

Full-Time Firefighters and the Urban Area

The BFD should increase its total complement in support of its existing minimum on-duty staffing of 35 firefighters. The first priority is to increase the total suppression complement to ensure the minimum staffing of on-duty firefighters can be met by the platoon complement. There is a need to hire eight firefighters to bring the total complement up to 180 firefighters as an immediate priority. This would increase the platoon complement from 43 to 45 firefighters, but keep the minimum on-duty at 35 firefighters.

Station 3 needs to be replaced and rebuilt on its existing site or relocated in the vicinity of Waterdown Road and Plains Road. Analysis in this report has shown that a location in the vicinity of Waterdown Road and Plains Road is a good location for Station 3. It is proximate to the proposed growth node at the Aldershot GO Station MTSA and covers the west end of the municipality. Site options for the reconstruction and possible relocation should be pursued as soon as practical. The BFD should be a key stakeholder as part of the Aldershot and Appleby GO MTSA Area-Specific Planning Projects processes currently being re-initiated by the City and be a stakeholder in other growth planning initiatives to ensure they can contribute to the process.

BFD should prioritize the addition of a proposed Station 9 downtown and increased staffing at Station 1. To improve the emergency response capability for the initial arriving company and initial full alarm assignment, as well as looking to future growth in the municipality, a number of options (or Scenarios) were assessed. Scenario 5, adding a pump staffed with four firefighters to a new downtown Station 9 and adding two staff to the Rescue in Station 1, resulted in a significant improvement in performance. This scenario would require an increase of six additional staff to the on-duty staffing of 35. To accomplish this requires the addition of 28 firefighters to the total complement to implement this across the four shifts, 20 firefighters for the new apparatus in new Station 9 and eight to fully staff the Rescue with four firefighters in Station 1. Recall that 12 firefighters to staff the Rescue with two firefighters in Station 1 is included in the calculation of the existing proposed complement of 180 firefighters.

Adding two firefighters to the Rescue in Station 1 provides for a full crew of four firefighters and when combined with the new Station 9 apparatus, makes a significant improvement to the initial full alarm assignment emergency response capability. An additional station downtown with four firefighters helps improve the response for the initial arriving company to 76% by being within a four minute travel time of many of the downtown calls that are beyond the four minute drive time from Station 1.

This full crew simultaneously helps improve the initial full alarm assignment (for a single family dwelling) emergency response performance to 50%. This is particularly important to the downtown area, but also at some of the growth nodes of the city. For example, development is underway in the vicinity of the Burlington GO Station M.TSA/Urban Growth Centre. The increase in high-rise, high-risk occupancies in the downtown and other nearby growth nodes is a significant reason to make this a priority. The initial full

alarm staffing requirements for an apartment building (up to three storeys) is 25 (26 if an aerial is used) and for a high rise its 38 (39 if building is equipped with a fire pump). The added six firefighters on-duty contributes significantly to meeting these staffing requirements when needed. This is identified as a priority because this is where development is currently taking place and is expected to continue in the short to medium term.

Hiring a total of 36 firefighters as part of this FMP (eight to enhance the total complement, eight to fully staff the Rescue in Station 1 and 20 to staff the new Station 9 downtown), is a significant investment in staff hired. This can be phased in over time, but will require a staffing plan, with the appropriate financial planning to ensure it can be achieved.

The improvements recommended in this plan do not achieve the proposed performance targets adopted for this FMP, but they do make some significant improvement. The anticipated growth in the municipality will continue past the life of this plan (i.e. 2031) and performance will need to be continuously monitored alongside the pace, location, and type of growth occurring. Other growth nodes, particularly at the Appleby GO Station MTSA/Urban Growth Centre, will also experience similar higher density, high-risk occupancies. Depending on the timing, improvements beyond those identified in Scenario 5 will be required.

In addition to the proposed Station 9 Downtown and increased staffing at Station 1, begin to plan for the relocation of Station 4, proposed addition of Station 10, and increased staffing to staff the existing aerial at Station 4 and redeploy it to proposed Station 10. The timing for some of these changes may be beyond the ten-year horizon of this plan, but Scenario #8 would be the next evolution of the plan. It includes the changes described in Scenario 5 (i.e. new downtown Station 9, adding staff to the Rescue vehicle in Station 1), but adds a relocated Station 4 to the southeast and a new Station 10 along Fairview Drive between Walkers Line and Appleby Line with the aerial from Station 4 staffed with four firefighters. This improves initial arriving company response coverage to 84% and the initial full alarm assignment (single family dwelling) to 53%. This requires eight additional staff over Scenario 5.

A variation of Scenario 8 was also modelled (but not mapped) with two additional staff on-duty on the Rescue in Station 7. The initial arriving company response coverage does

not change when compared to Scenario 8, but it does improve the initial full alarm assignment (single family dwelling) response coverage to 64%. This requires eight additional staff over Scenario 8.

On an annual basis, monitor the implementation and recommendations of this FMP, with consideration to the pace, location, and nature of the anticipated growth. The discussion of the evolution beyond Scenario 5 and the life of the plan is to highlight that improvement to response coverage will continue to be required beyond the 2031 horizon year of the plan. It is good practice to update the fire master plan every five years to ensure that any changes in the municipality (e.g. changes in the community risk assessment, growth in population and employment, future growth plans) are reflected in the updated plan. Due to the potential pace of growth and recognizing that the policy frameworks and priorities will (at a minimum) become more refined as ongoing planning processes such as the Halton Region Official Plan Review conclude, it is important that the BFD monitor the implementation and recommendations of this FMP on a regular basis.

This is particularly relevant at this time as the analysis has identified the future need for possibly four new fire station sites:

- Station 3 needs to be rebuilt/relocated due to its end of life cycle;
- There is a priority requirement for a site in the downtown for Station 9;
- Relocate Station 4 to the southeast, and
- add a new Station 10 in the Fairview Road corridor (Walkers Line to Appleby Line)

It should be noted that the relocation of Station 4 is only recommended in conjunction with a new Station 10 to ensure the growth in the Fairview Road corridor and at the growth nodes continues to be well served.

Acquiring sites in some or all of these locations may be a challenge due to existing development. Even though it may be beyond the life of this plan, it would be prudent to begin to plan for a relocated Station 4 in the vicinity of New Street, west of Appleby Line and for a new Station 10 along the Fairview Road, between Walkers Line and Appleby Line. Stations and staffing in these areas will help address both the initial arriving company and initial full alarm assignment emergency response capabilities of the BFD.

8.12.2 Volunteer Firefighters and Rural Response

The analysis within the MFP highlights several challenges and opportunities relating to the volunteer firefighters. The response capabilities into the rural area of the City as compared to the proposed NFPA 1720 performance target of six firefighters in 14 minutes of response time illustrates an existing coverage of 42% of the rural area and 53% of historical rural calls in the rural area.

The following subsections highlight proposed strategies relating to the use of the volunteer firefighters and staffing, as well as rural response considerations including tanker shuttle accreditation and automatic aid agreements.

8.12.2.1 Station 5 Volunteer Firefighter Complement

Volunteer firefighter turnout can be a challenge, particularly during the weekday-daytime hours. Station 5 has a current complement of 14 firefighters against an approved complement of 30 firefighters. There is an urgent recruitment process to increase those numbers. To help improve both the number of firefighters that turnout and turnout times for the volunteer complement in Station 5, consideration should be given to increasing the approved complement. Appreciating the challenge of maintaining the current complement, experience has shown that this increased level of staffing is more likely to muster an appropriate response when required. This is particularly true when the desire is to staff a minimum of two trucks from the station when a response is required, as is the case in Station 5. This will require an enhanced recruiting and retention strategy and possible refinements to the recruitment policies in terms of place of residence/employment.

With these changes, there is the potential to improve the emergency response deployment capabilities in the northern part of the rural area as compared to existing conditions for the proposed NFPA 1720 performance target for the rural area.

8.12.2.2 Station 1 Volunteer Firefighters Role

The Station 1 volunteer firefighters in the urban area currently play a support role in fire suppression activities in the urban area and are not included in any initial alarm (either initial arriving or full alarm assignment). Given the need to improve the initial full alarm assignment response capabilities for the urban area, particularly for the high-risk

occupancies, the volunteer firefighters present an opportunity as an underutilized available resource.

As an example, for the high-rise, high risk occupancies where 38 (39 if the building is equipped with a fire pump) firefighters are required. The travel time included in this performance target is 10 minutes and 10 seconds (660 seconds). While there is a longer turnout time for volunteers, where turnout time is less than 660 seconds, they can contribute to the response for the area they can respond to with the remaining time and be part of the initial full alarm assignment. Even if they cannot be on the scene within the stated time of the performance target, they are additional staff to perform the necessary functions at a significant incident. They could also be used to backfill a station when a full-time firefighter apparatus is out on a call and be the initial arriving company when simultaneous calls happen in the same response district.

While it is recognized that there is a history of limiting the role of Station 1 volunteer firefighters to support only, consideration should be given to reviewing their role as part of the comprehensive volunteer firefighter review (see Section 5.11) with a view to taking advantage of this available resource. This will be of particular importance as the built form of the City of Burlington continues to evolve over the horizon of this FMP and beyond to occupancies that require increased fire suppression resources, such as high-rise residential occupancies.

The current approved complement at Station 1 is 35 volunteer firefighters. This may be a sufficient complement for their current role as support. As part of the proposed consideration of evolving their role consideration should be given to increasing the complement of volunteer firefighters, if warranted.

8.12.2.3

Volunteer Firefighter Scheduled On-call Program

To further help ensure a sufficient turnout when required, the BFD should consider a scheduled on-call process and enhance their recruitment and retention strategies. In our experience the development of a volunteer firefighter scheduled on-call process has proven to be an effective strategy towards enhancing the response and utilization of volunteer firefighters. This strategy is intended to provide the Fire Chief with knowledge that a specific number of volunteer firefighters have agreed in advance to be available to respond within a specific turnout time. In comparison to the current volunteer

firefighters operating model where there is no assurance of a response by any volunteer firefighters, this model is intended to provide that assurance.

This strategy should be developed through consultation with the volunteer firefighters with recognition it may not be applicable to all of the fire stations or to all of the volunteer firefighters. It may also require some form of compensation depending on the goals and targets developed. The concept of this strategy is presented to enhance the fire suppression deployment capabilities of the BFD by reducing the turnout times of the volunteer firefighters and providing the Fire Chief with assurances on the number of volunteer firefighters that would be responding at all times. Over the long-term, it will continue to provide assurance as to staff availability. At a minimum, this strategy could be applied to the Station 5 complement of volunteer firefighters. Consideration should be given to reviewing a scheduled on-call program as part of the comprehensive volunteer firefighter review (see Section 5.11).

8.12.2.4

Additional Rural Response Capability Considerations

This section describes some additional rural response capability considerations, namely tanker shuttle accreditation, North Aldershot, and automatic aid.

Tanker Shuttle Accreditation

Section 3.4 of this MFP described FUS and the superior tanker shuttle accreditation which is important for emergency response in areas not protected by fire hydrants.

Based on correspondence from FUS dated September 19, 2019, the City of Burlington is currently accredited with superior tanker shuttle service status for residential properties within eight kilometers (by road) and commercial properties within five kilometers (by road) of the Fire Station #5. This accreditation expires October 4, 2024.

A 2014 correspondence from FUS indicates fire hydrant protection is provided for properties in the sub districts identified by FUS as Fire Stations 1, 2, 3, 4, 6, 7 and 8. Properties outside of these sub districts are classified as “unprotected” by fire hydrants.

Further consideration of the increasing fire protection in sub districts classified as “unprotected” may be warranted. The BFD should investigate increased fire protection in sub-districts currently classified as “unprotected” by the Fire Underwriters’ Survey. In our experience, the support of neighbouring fire services may be required to achieve

this accreditation through the use of automatic aid agreements to supply additional tanker trucks. This is a common practice in many rural, non-municipal water system areas of the province. In addition, the Station 1 volunteer firefighters could contribute to tanker shuttle.

It is recommended that the BFD investigate increased fire protection in sub-districts currently classified as “unprotected” by the Fire Underwriters’ Survey, including an expanded superior tanker shuttle accreditation and the use of updated automatic aid agreements.

North Aldershot

As previously described, North Aldershot is a district policy area in the City of Burlington. The goal of the North Aldershot policy review, being undertaken by Halton Region, is to update the land use permission to reflect the current provincial policy framework. However, over the horizon of this FMP, growth will be directed primarily to the City’s urban area.

Given its distinct geography and location within the City, this area warrants additional consideration, in part recognizing historical development permissions (Eagle Heights) and existing servicing (Bridgeview South).

As part of the fire suppression emergency response deployment capabilities assessment, this area was considered as part of the rural area of the City. As shown in the existing conditions analysis, the emergency response coverage capabilities were low. **As the development plans for the area become clearer, the addition of another apparatus to Station 3 staffed with two firefighters would be appropriate.** This would result in a total of six firefighters responding from Station 3 and would provide for the minimum rural staffing to meet the NFPA 1720 performance benchmark for the area that can be served in 14 minutes of turnout time plus travel time, which will be much of North Aldershot. This would also provide more resources to serve the Aldershot MTSA. A rescue vehicle may be the most appropriate apparatus given its position as the most westerly station, the land use and geography of the area and its proximity to Highway 403.

While existing Station 3 is well positioned to respond to this area, proposed strategies to address North Aldershot include:

- Pursuing tanker shuttle accreditation for all unprotected sub-districts,
- Ensuring that the automatic aid agreement in place with the City of Hamilton reflects the response needs of the area with consideration to emergency response coverage as presented in this FMP and known growth potential;
- Developing and implementing strategies related to fire prevention, education, and enforcement for those areas that may experience extended emergency response times; and
- In the longer term as development plans become clearer, it is appropriate to consider adding additional resources to Station 3 in the form of a rescue vehicle, initially staffed with two firefighters.

Automatic Aid

The discussion regarding both tanker shuttle accreditation and North Aldershot highlight the importance of automatic aid. As discussed in **Section 5.5.2**, the City of Burlington has an automatic aid agreement with the:

- Town of Milton for response into the northern portion of the rural area of the City. The community of Kilbride is 9.3 km from the closest Milton Fire Department station with full-time firefighters (Station 3) which is closer than BFD Station 2 (12.5 km) and Station 7 (14.3 km).
- With the Town of Oakville for the QEW between Appleby Line and Bronte Road
- With the City of Hamilton for North Aldershot.

The BFD should ensure the automatic aid agreement in place with the City of Hamilton, the Town of Milton and the Town of Oakville reflect the changes proposed in this Fire Master Plan and the response needs of the City.

8.12.3

Implement Improvements to Total Response Time

Improving the performance capabilities of the dispatch time and turnout time does not directly impact the department's ability to achieve the NFPA 1710 standard travel time performance target of a four minute travel time for initial arriving company. However, it would have a positive impact on improving the department's **Total Response Time** capabilities. The total response time is of course is what residents or business experiences in the event of an incident.

The analysis of the BFD historical fire suppression emergency response capabilities identified the opportunity to try and reduce dispatch and turnout times to further enhance the department's emergency response fire suppression capabilities.

8.13

Operations Division Summary and Recommendations

The Operations Division is primarily responsible for the delivery of fire suppression and emergency response services. The existing organizational structure of this division is that of composite model that utilizes both full-time and volunteer firefighters. This composite organizational model is recognised within the fire services as a cost effective and efficient organizational structure for delivering these types of services.

The majority of growth for the City of Burlington will be accommodated through intensification within the existing urban area. The Primary Growth Areas include: three Major Transit Station Areas (MTSA) (Aldershot, Burlington, and Appleby GO Stations); Downtown Burlington; and Uptown Burlington. This plays a significant role in the assessment of this division's needs. Increasing emergency call volume and an expanding building stock that includes high rise and high-risk occupancies are further challenging the ability of this division to respond with adequate resources.

This fire master planning process recognises the importance of sustaining the use of volunteer firefighters as the initial responders in the rural area of the community. Enhanced use of the volunteers in Station 1 is suggested as a way to enhance the ability to meet the initial full alarm assignment for the higher risk occupancies when significant staff resources are required and for tanker shuttle accreditation.

This fire master planning process has identified the use of updated (in 2020) NFPA performance targets for use by the BFD in assessing its fire suppression deployment targets based on a comprehensive analysis of current industry guidelines, standards and best practices. This is required to recognise the continuing community growth and evolution of fire risk within the community. As referenced within the CRA, 93.53% of the City's existing building stock is comprised of Group C- Residential Occupancies. Current industry guidelines, standards and best practices support an initial full alarm assignment of **"16 firefighters (17 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents"** to this type of fire risk. With its

current resources and station locations, this is a level of service that the BFD is able to achieve to 13% of the urban area and 17% of historical fire or medical calls.

As a result of the review of the Operations Division, the following goal, targets, and recommended actions are provided for Council's consideration.

8.13.1

Goals, Targets, and Recommendations

Goal #4: Burlington Fire Department will provide emergency response services in alignment with its local needs and circumstances as confirmed through a Community Risk Assessment and with consideration to health and safety, industry best practices, future growth, and the services that provide the most effective and efficient level of services resulting in the best value for the community.

Target #4A: Strive for continuous improvement through monitoring emergency response performance as compared to applicable industry best practice and with consideration to the risk of Group C – Residential occupancies.

Recommended Action: That the BFD establish fire suppression performance targets for the defined urban area based on NFPA 1710 and to use them to monitor and report to Council and the community, including:

- a. The proposed fire suppression performance targets for the defined urban area being:
 - i. Initial Arriving Company - Four firefighters arriving on scene within a four minute travel time to 90% of fire suppression incidents.
 - ii. Single-Family Dwelling – Initial Full Alarm Assignment - 16 firefighters (17 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type
 - iii. Apartment – Initial Full Alarm Assignment - 25 firefighters (26 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type
 - iv. High-Rise – Initial Full Alarm Assignment - 38 firefighters (39 if building is equipped with a fire pump) arriving on scene within a

- ten minute and ten second travel time to 90% of fire suppression incidents in this occupancy type
- v. Dispatch time: 64 seconds or less for at least 90% of the alarms
- vi. Turnout Time: 80 seconds or less for all fire-related and special operations incidents
- vii. Total response time of 384 seconds for an initial arriving company and 644 seconds for an initial full alarm (except for high rise incident which shall be 754 seconds) to 90% of fire suppression incidents. **(Section 8.6.2)**
- b. That the BFD establish fire suppression performance targets for the defined rural area based on NFPA 1720 and to use them to monitor and report to Council and the community, including: Rural Demand Zone – 6 firefighters arriving on scene within a 14 minutes turnout time + travel time to 80% of fire suppression incidents in the defined rural area. **(Section 8.6.3)**
- c. That the BFD working with the City's Legal and Community Planning departments monitor, update and implement the recommendations of this Fire Master Plan, as the municipal comprehensive review process and additional City planning projects unfold, whereby more detailed and refined information will become available in regard to growth areas, population projections, and built form. The Fire Chief will provide additional information and requests to support resource needs for growth following the City's established processes. **(Section 8.10)**

Recommended Action: That the BFD work with the City's Transportation Services department to look for opportunities to improve travel time through coordinated efforts, such as signal coordination, traffic calming, posted speed limits, lane reductions, and other traffic measures. **(Section 8.9.3.4)**

Recommended Action: That the BFD identify and implement strategies to improve the department's dispatch time and turnout time. This may require a more in-depth review of each component step in the dispatch and turnout processes to assess where improvements may be possible. **(Section 8.7.7)**

Recommended Action: That the BFD should ensure the automatic aid agreement in place with the City of Hamilton, the Town of Milton and the

Town of Oakville reflect the changes proposed in this Fire Master Plan and the response needs of the City. **(Section 8.12.2.4)**

Target #4B: Move towards the fire suppression staff resources that reflect the needs and circumstances of the community.

Recommended Action: That the BFD establish a long-term hiring strategy in alignment with community and station growth, industry leading practices, Establishing and Regulating by-law service delivery, and performance targets. The Fire Chief to submit requests for increased resource needs as part of the City's established processes, including:

- a. Hiring eight firefighters to increase the existing total career suppression complement from 172 to 180 firefighters (i.e. 45 firefighters per platoon) in order to maintain the minimum 35 firefighters on-duty per platoon, as an immediate priority. This will largely support staffing at Station 8. **(Section 8.1.1 and 8.12.1)**
- b. Hiring eight firefighters to increase the on-duty staffing on the Rescue vehicle in Station 1 from two to four firefighters as a priority. **(Section 8.12.1)**
- c. Hiring 20 firefighters in advance of opening the proposed new Station 9 in downtown Burlington. **(Section 8.12.1)**

Recommended Action: That the BFD investigate increased fire protection in sub-districts currently classified as “unprotected” by the Fire Underwriters’ Survey, including an expanded superior tanker shuttle accreditation and the use of updated automatic aid agreements. **(Section 8.12.2.4)**

Target #4C: Plan for required station replacements and prepare for growth by planning for the need for increased fire suppression resources.

Recommended Action: Based on monitoring the actual timing of growth and with consideration to an updated Community Risk Assessment, develop and implement plans to respond to forecast growth:

- a. Working with other municipal departments, identify and potentially acquire a site for the reconstruction/relocation of existing Station 3 in the vicinity of Waterdown Road/Plains Road.

- b. Working with other municipal departments, identify and acquire a site for the construction of a new downtown Station 9 as a priority.
- c. On an annual basis, monitor the implementation and recommendations of this FMP, with consideration to the pace, location, and nature of the anticipated growth and update the FMP as needed, at least every five years.
- d. Begin to plan for a longer-term relocated Station 4 in the vicinity of New Street, west of Appleby Line and for a new Station 10 along Fairview Road, between Walkers Line and Appleby Line by identifying and acquiring potential sites. **(Section 8.12.1)**
- e. Monitor growth and development in North Aldershot, including the Aldershot MTSA, for the need to add additional resources, likely beyond the horizon of this plan. As development plans become clearer, it is appropriate to consider adding additional resources to Station 3 in the form of a rescue vehicle, initially staffed with two firefighters. This would require the addition of 12 firefighters to staff the vehicle on a 24/7 basis. **(Section 8.12.2.4)**

9.0

Maintenance Division

The Maintenance Division is responsible for the maintenance and repair of all Burlington Fire Department vehicles and equipment and oversees the maintenance and repair of fire department facilities. This section provides a review of the division, the department's fleet and equipment.

9.1

Division Key Functions

The Burlington Fire Department Maintenance Division operates from a stand-alone facility complete with a parts room and pit area located at the headquarters site. It was noted that the facility serves the division well. The only identified challenge is that there is no air conditioning. This makes the facility hot in the summer months and difficult to work from.

Key functions of the Division include:

- Annual mechanical certification of vehicles
- Equipment repair
- Coordination of work that is contracted out such as aerial ladder testing, pump testing
- Oversight and coordination on minor capital facility repairs
- Oversight of vehicle parts and supplies
- Vehicle inventory and parts control

These functions are completed following the NFPA 1901: Standard for Automotive Fire Apparatus and the NFPA 1911: Standard for Inspection, Maintenance, Testing and Retirement of In-Service Emergency Vehicles. This practice is consistent with current industry best practices and provincial requirements.

The Maintenance Division utilizes asset management software to aid the effectiveness of the division.

9.2

Maintenance Division Staffing and Resources

The maintenance division consists of two FTE maintenance staff and one maintenance supervisor who report to the Deputy Chief of Communications, Mechanical, and Critical Infrastructure.

The division staff are responsible for and conduct most of the repair work completed on fire apparatus in house. Some work is contracted out such as; pump testing and, ladder testing. Warranty for some emergency response equipment and electronics also requires the manufacturer to perform maintenance and repairs and this at times is limited to the availability of the manufacturer or supplier. The workload of the existing mechanics appears to be primarily focused on repairs, leaving limited time for preventative maintenance. This suggests available staffing resources are or may become insufficient to serve the needs of the department. A workload analysis would help understand where the mechanics are spending their time and if additional resources are required to complete the necessary work.

A fleet mechanic performs a crucial role and is responsible for the maintenance, inspection, diagnosis and repair of emergency and support vehicles and equipment in compliance with legislatively mandated guidelines to maintain the required level of emergency vehicles and equipment for operations.

Fire apparatus are special mechanical apparatus that require in-depth knowledge, skills, and training to conduct maintenance on. Newer fire apparatus are technologically smarter and greener, which adds vast amounts of additional technology to today's fire apparatus. From on-board computer systems that monitor the critical systems of the apparatus, to the emissions-reduction systems, there are many more components on fire apparatus that require specific skill and tradecraft.

Trained and certified Emergency Vehicle Technicians (EVT) are considered as an industry best practice and should be incorporated into the Career Paths program.

Emergency response apparatus are inspected by crews at the beginning of each shift and each Wednesday for apparatus assigned to volunteer firefighters, in keeping with industry best practices and Ministry of Transportation requirements. The recording of maintenance and repairs on fleet, equipment, and facilities, as well as the recording of inventory is tracked manually and is utilizing an informal paper system.

The Burlington Fire Department Maintenance Division utilizes a fleet management software program to track and identify apparatus and equipment. There is an opportunity to better leverage technology to enhance the maintenance program, inventory tracking for all fleet, equipment and facilities.

It is recommended that the BFD continue to implement the identified software solutions for enhanced vehicle maintenance record keeping and inventory control for all fleet, equipment and facilities.

9.3 Fire Apparatus

Overall, the apparatus and equipment within the Burlington Fire Department is maintained in good condition.

PFSG 04-07-12 Types of Apparatus and Equipment was developed to provide communities, such as the City of Burlington, with options to follow in determining the level of fire suppression and types of fire apparatus and equipment that should be available within the community. PFSG 04-07-12 provides the following information for consideration:

- Demands on municipal resources force all communities to re-evaluate the level and nature of services they provide;
- Traditional approaches to the delivery of fire suppression with full-size triple combination pumpers may not necessarily be the most appropriate way to deliver this component of community fire safety, particularly in small communities with limited availability of firefighting personnel;
- The primary mission of all fire departments should be to ensure that the community is provided with an optimal level of fire protection in a cost effective and efficient manner. This optimal level may require a much greater emphasis on fire prevention and public education activities – with residents being responsible for protection within their own residences;
- New technology provides options;
- Must be appropriate to the fire suppression needs of the community;
- Dependent upon availability of human resources needs to work closely with neighbouring communities; and,
- Focus must still be on community fire safety initiatives.

PFSG 04-07-12 refers to the **NFPA: 1901 Standard for Automotive Fire Apparatus (2006 Edition)** as a reference for the standards that should be considered in determining the appropriate apparatus for a community. NFPA 1901 (2016 Edition) provides definitions of major fire apparatus:

- **Pumper:** Fire apparatus with a permanently mounted fire pump of at least 750 gpm (3000 L/min) capacity, water tank and hose body whose primary purpose is to combat structural and associated fires.
- **Initial Attack Apparatus:** Fire apparatus with a fire pump of at least 250 gpm (1000 L/min) capacity, water tank, and hose body whose primary purpose is to initiate a fire suppression attack on structural, vehicular, or vegetation fires and to support associated fire department operations.
- **Mobile Water Supply Apparatus (Tanker):** A vehicle designed primarily for transporting (pick-up, transporting, and delivering) water to fire emergency scenes to be applied by other vehicles or pumping equipment.
- **Quint:** Fire apparatus with a permanently mounted fire pump, a water tank, a hose storage area, an aerial ladder or elevating platform with a permanently mounted waterway, and a complement of ground ladders.
- **Aerial Device:** A vehicle equipped with an aerial device, elevating platform, or water tower that is designed and equipped to support firefighting and rescue operations by positioning personnel, handling materials, providing continuous egress, or discharging water at positions elevated from the ground.
- **Special Services Fire Apparatus:** A multipurpose vehicle that primarily provides support services at emergency scenes.

In addition to NFPA 1901 the industry commonly refers to the following types of major fire apparatus:

- **Rescue:** A vehicle specifically designed for the purposes of transporting specialized rescue equipment such as vehicle extrication equipment, water/ice rescue equipment, hazardous materials equipment, and additional fire suppression support equipment such as additional self-contained breathing apparatus.
- **Pump/Rescue:** A vehicle that combines the traditional functions of a pumper and a rescue apparatus into one multi-functional apparatus.

The Burlington Fire Department operates a fleet of major apparatus that reflects the needs of a modern fire service and is aligned with the size of the department and the services provided. The fleet reflects what would be expected based on the fire risks present within the community. The current major apparatus fleet assigned to the fire stations as “front line” apparatus (meaning they are available for emergency response at all times) is listed in **Table 37**. This table also presents the planned replacement years forecast within the current Burlington Fire Department fleet replacement program.

Table 37: Major Fire Apparatus

Unit Number	Station Number	Description	Fleet Number	Service Date	Replacement Date
P311	1	Pumper	1005-20	2020	2032
P301	1	Pumper/Tanker	1018-18	2018	2038
SU301	1	Support Unit	1035-17	2017	2037
R312	1	Rescue	1021-12	2012	2025
SU305	5	Support Unit	1003-15	2015	2027
P321	2	Pumper/Rescue	1020-12	2012	2023
Q331	3	17m Quint	1047-17	2017	2029
P331	3	Pumper	1049-03	2003	2025
L342	4	32m Aerial Ladder	1002-10	2010	2022
P341	4	Pumper	1007-20	2020	2032
P305	5	Pumper/Tanker	1019-96	2018	2038
T305	5	Tanker	1048-03	2003	2027
P361	6	Pumper	1006-12	2012	2022
R372	7	Rescue	1022-12	2012	2025
P371	7	Pumper	1008-06	2006	
Q381	8	23m Quint	1004-14	2014	2027

9.4

Existing Reserve Fleet

Maintaining a reserve fleet of fire apparatus reflects current industry best practices and is supported by the Fire Insurance Underwriters as due diligence on behalf of the municipality. It should be recognized that this apparatus may be needed under emergency conditions to sustain the level of Council approved fire suppression services in the event of an apparatus breakdown. This apparatus also provides greater flexibility in the event of a major incident.

The Burlington Fire Department currently has a fleet replacement plan that is built on a number of apparatus factors. These include condition, age, repair costs, service use and the number of kilometers or hours. There are four reserve apparatus used when front line vehicles are out of service and require replacement, meaning that the apparatus is equipped and ready to respond at all times. Reserve apparatus are stationed strategically throughout the fire department at Station 1, 2, and 7 as presented in **Table 38**.

Table 38: Service Ready Major Fire Apparatus

Unit Number	Station Number	Description	Fleet Number	Service Date
P314	1	Pumper/Rescue	1010-06	2006
L315	2	32m Aerial Ladder	1001-03	2003
R316	7	Rescue	1026-06	2006
P317	2	Pump Rescue	1008-06	2006

9.5

Small and Specialized Vehicles

In addition to the major fire apparatus, the Burlington Fire Department operates a number of small and specialized vehicles. This includes vehicles for administration staff (Fire Chief and Deputy Fire Chiefs), training staff, operations, mechanical staff, and fire prevention staff. A list of the small and specialized vehicles found within the Burlington Fire Department are listed in **Table 39**. This table also provides the forecast replacement dates based on the current Burlington Fire Department fleet replacement plan and capital budget forecasts.

Table 39: Current Small and Specialized Apparatus

Unit Number	Station	Description	Fleet Number	Service Date	Projected Replacement Date
	1	Covid Extra Staff Vehicle	1015-12	2012	x
C3	1	Suppression	1015-20	2020	2027
C16	1	Prevention	1016-13	2013	2024
C23	1	Prevention	1023-13	2013	2021
T43	1	Training	1043-20	2020	2032
C30	1	Suppression	1044-17		2024
T29	1	Training	1029-20	2020	2032

Unit Number	Station	Description	Fleet Number	Service Date	Projected Replacement Date
C1	1	Suppression	1012-20	2020	2027
C2	1	Suppression	1046-20	2020	2027
T39	1	Maintenance	1039-13	2013	2026
T33	1	Salter and Plow Maintenance	1033-19		
T38	1	Trailer Maintenance	1038-10	2010	N/A
C14	2	Prevention	1014-13	2013	2024
C24	2	Prevention	1024-12	2012	2024
	5	Suppression	1053-16	2016	2028
	Lasalle Park	Portable Pump	1030-89	1989	2021
C17	6	Prevention	1017-13	2013	2023
C11	7	Prevention	1011-13	2013	2024
C27	8	Prevention	1027-13	2013	2024
C13	8	Prevention	1013-11	2011	2024

9.6 Fleet Replacement Plan

Lifecycle management is a core component of the capital planning process and fleet standardization strategy across Canada. The FUS requires that all major fire apparatus meet either the Underwriters Laboratories of Canada – S515-04 or the NFPA 1901. FUS identifies the following major fire apparatus replacement guidelines.

- Major Cities 12 to 15 years, with an additional five years in reserve.
- Medium sized cities 15 years, with an additional five years as back up, and 5 years in reserve.
- Small municipalities 20 years, with an additional five years second line or reserve.

The FUS defines a major city as “an incorporated or unincorporated community that has: a population area (or multiple areas) with a density of at least 400 people per square kilometer; and a total population of 100,000 or greater”.

The City of Burlington meets the criteria of “major city” and as such, the applicable replacement strategy for the Burlington Fire Department reflects a 12 to 15-year front

line life cycle with an additional five year (reserve use) overall life cycle plan. This aligns with the current replacement practices of the Burlington Fire Department.

To support the lifecycle management program, the Burlington Fire Department maintains a capital budget that allows for the purchase of new equipment and the replacement and refurbishment of existing equipment. There is a comprehensive 2020 capital budget forecast that identifies the planned replacement schedule for all apparatus and equipment based on the capital ten-year replacement schedule. The plan ensures operational functionality.

Replacement frequencies of small and specialized vehicles vary depending on the division, type and use of the vehicle and are included in the capital planning.

9.7 Emergency Response Equipment

The Burlington Fire Department is a large municipal fire service that requires an extensive inventory of equipment to provide services. This fire equipment includes items such as firefighter personal protective equipment (PPE), SCBA, firefighting and supply hose and appliances, ladders, rescue tools, and many specialized rescue tool components. The Maintenance Division, with support of the Suppression Division, is responsible for the acquisition care and maintenance of the department's mechanical equipment. Select items are contracted out for maintenance and testing purposes. These items include ladder testing, aerial ladder testing, pump testing, and annual maintenance on PPE.

9.8 Maintenance Division Summary and Recommendations

Our review of the Burlington Fire Department Maintenance Division indicates that many aspects of its operations reflect current best practices within the fire service in Ontario. The Burlington Fire Department maintains a reserve fleet, and an equipment maintenance and repair program that meets the basic needs of the department. This section of the FMP includes recommendations that the Burlington Fire Department may consider to increase the development, effectiveness and efficiency of the Maintenance Division. As the department continues to streamline processes there will be a need to enhance fleet maintenance and repairs and revise its approach to records management including work orders, maintenance requests, inspections, and inventory.

Goal #5: The Burlington Fire Department will provide a maintenance program for apparatus, equipment and facilities that ensures the appropriate quantity, quality, and reliable condition to meet the needs of the community and the operations of the fire department.

Ongoing initiatives with the Career Paths program, and plans to implement identified software solutions for enhanced vehicle maintenance record keeping and inventory control for all fleet, equipment and facilities, will serve the department well as part of continuous improvement.

10.0 Municipal Emergency and Continuity Management Program

This section of the FMP is guided by the appropriate legislation and industry standards and provides an overview of the emergency preparedness, planning and management activities taking place within the City of Burlington. While Dillon reviewed this as part of the FMP process, it is important to note that municipal emergency planning is a municipal responsibility with separate and independent legislation from the fire service.

10.1 Emergency Management Legislation and Regulation in Ontario

The legal framework for managing emergencies in Ontario is established in the Emergency Management and Civil Protection Act (EMCPA). An emergency is defined as “a situation or an impending situation that constitutes a danger of major proportions that could result in serious harm to persons or substantial damage to property and that is caused by the forces of nature, a disease or other health risk, an accident or an act whether intentional or otherwise.”

The Act is complemented by Ontario Regulation 380/04: Standards, which lays out the minimum requirements with respect to the provision of emergency management programs by municipalities and provincial ministries.

Under the EMCPA, the Solicitor General is responsible for the administration of this Act. RSO 1990, c. E.9, s. 2 and has the authority to make regulations setting standards for the development, implementation and maintenance of emergency management programs required by every municipality. It further requires that every municipality, minister of the Crown, and designated agency, board, commission and other branch of government ensure emergency management programs and emergency plans conform to the standards set within the Act. To verify compliance with the EMCPA, municipalities are required to annually review and submit supporting documentation which includes:

- Emergency Response Plan;
- Proof of training;
- Proof of exercises;
- Evidence of a public education program;

- Hazard Identification Risk Assessment (HIRA);
- Critical Infrastructure list; and,
- Emergency Management Program By-law.

10.2 City of Burlington Emergency and Continuity Management Program

10.2.1 Emergency and Continuity Management Program By-law 10-2021

The City's emergency and continuity management program is provided for under the authority of By-law 10-2021, which was passed February 16, 2021. The By-law includes the following appendices:

- Appendix A – The Municipal Emergency and Continuity Program
- Appendix B – The Municipal Emergency Response Plan
- Appendix C – The Emergency Management Program Committee Terms and Conditions

10.2.1.1 Appendix A – Municipal Emergency and Continuity Program

As outlined in Appendix A to By-law 10-2021, an emergency management and continuity of operations program that addresses disaster risk reduction, preparedness response and recovery includes the following elements:

- | | |
|--|--|
| • Hazard identification and risk assessment; | • Public awareness and education; |
| • Business impact analyses; | • Training and exercise; |
| • Critical infrastructure identification; | • Business continuity/ continuity of operations; |
| • Disaster risk reduction strategies; | • Municipal Emergency response; |
| • Emergency communication and warning; | • Recovery; and, |
| | • Rehabilitation |

The program is developed and updated using Canadian Standards Association (CSA) Z1600-14- Emergency and Continuity- Management Program standard as a benchmark for continual improvement.

10.2.1.2 Appendix B – Municipal Emergency Response Plan

Appendix B of By-law 10-2021 – Municipal Emergency Response Plan provides the framework on how the City will respond to, mitigate and recover from an emergency.

At the time of this divisional analysis, the Ministry of the Solicitor General issued Incident Management System (IMS) Guidance Version 2.0 in 2021. IMS 2.0 builds on the strong foundation of the previous IMS 1.0. (2008). The guidance document's development has been informed by best practices and lessons learned from all areas of incident management. Ontario's Incident Management System is designed to provide communities and organizations a common framework to communicate, coordinate and collaborate during a major event/disaster. IMS is an important element in building a comprehensive and effective emergency management program.

In 2014, the City adopted the IMS model across all city departments and aligned its processes with those of the Region of Halton. This alignment is outlined under the EMCPA which states that "The emergency plan of a lower-tier municipality in an upper-tier municipality, excluding a county, shall conform to the emergency plan of the upper-tier municipality and has no effect to the extent of any inconsistency and, for the purposes of this section."⁴³

10.2.2 Municipal Staff Training and Exercises

The Emergency Management and Civil Protection Act requires municipalities in Ontario to train city staff involved in the jurisdiction's emergency management program. Courses are available through Emergency Management Ontario (EMO), based on best practices and principles across the province. EMO administers courses in the areas of Incident Management Systems, Exercise Program Management, Note Taking, Basic Emergency Management (BEM) and Community Emergency Management Coordinator (CEMC) training. The most current guidance provided to municipalities with respect to emergency management training is Guidance Note: 2018-01-01, which specifies the following four courses as mandatory for CEMCs:

- Basic Emergency Management (EM 200);

⁴³ Emergency Management and Civil Protection Act, R.S.O. 1990, Chapter E.9, Section 5.

- Community Emergency Management Coordinator (EM 300);
- Introduction to Incident Management System (IMS 100) available on-line; and
- Basic Incident Management System (IMS 200)

O. Reg. 380/04, requires Community Emergency Management Coordinators to complete the required training within one year of being appointed a CEMC

Further, Municipal Emergency Control Group members are required to demonstrate adequate training on an annual basis in each of the following areas:

- Knowledge of all components of the emergency management program, including the HIRA and Critical Infrastructure list;
- Knowledge of the Municipal Emergency Plan, including their respective roles and responsibilities as well as the roles and responsibilities for local agencies and organizations included in the Plan;
- Knowledge relating to the procedures required to activate and operate under the Municipal Emergency Plan;
- Knowledge of notification procedures for the MCEG when the Plan is activated; and,
- Knowledge of the location, and equipment utilized in the Emergency Operations Centre.

The 2018 guidance also suggests those with responsibilities during a large scale emergency to maintain records complete Emergency Management 240 – Note Taking to ensure proper documentation is prepared in the event of an emergency which requires the activation of the Emergency Operations Centre. While this training is not mandatory, in our experience, municipal staff have found value in participating in this course offering.

Consultation with BFD emergency management personnel has identified that they have partnered with Halton Region for the provision of provincial courses such as Basic Emergency Management Systems, IMS 200, and scribe training, The City has also hosted an eight-hour general emergency management workshop through the International Association of Fire Fighters.

10.2.3 Public Education on Risks to Public Safety and Preparedness

The EMCPA requires municipalities to provide emergency preparedness education to the community. Public education on risks to public safety and preparedness is currently

provided including through social media, pamphlet style information and website to mention a few.

The City's website includes general information about what to do before during and after an emergency event. The City may wish to consider including the location of warming/cooling centres on its emergency preparedness web page as well as the location of splash pads where residents can seek relief from heat on high temperature days.

Website visitors are provided with a link to Halton Region's comprehensive emergency preparedness guide. The guide contains detailed information about emergency preparedness in the home, emergency management programs and partners, emergency and non-emergency contact numbers. The guide also contains emergency plan templates for residents interested in preparing for emergency events.

The City has recently purchased virtual reality equipment in preparation for the launch of an innovative emergency preparedness public education initiative. Virtual reality training provides an immersive learning experience that goes beyond traditional public education platforms, allowing members of the public to interact and explore various concepts of emergency preparedness, including home escape planning.

10.2.4 Critical Infrastructure List

The EMCPA requires municipalities to identify critical infrastructure. Additionally, Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure, requires municipalities to have plans in place to address the vulnerabilities affecting certain municipal infrastructure assets; levels of service; maintenance schedules; adaptation opportunities and amongst other things, disaster planning and contingency funding. Ensuring the City's critical infrastructure is protected from vulnerabilities, whenever possible is vital to the resilience of the community.

The City maintains a list of critical infrastructures as required by the EMCPA. As per Appendix A of By-law 10-2021, the City Burlington uses this information to develop procedures with the following targets in mind:

- To build partnerships – to support and enhance CI resiliency;
- Implement an all-hazards risk management approach – promotes the application of risk management and sound business continuity planning; and,

- Advance the timely sharing and protection of information among partners and key stakeholders.

10.2.5 Business Continuity and Emergency Planning Coordinator

The City's Business Continuity and Emergency Planning Coordinator's primary responsibility is ensuring corporate compliance with the Emergency Management and Civil Protection Act (EMCPA) which sets out the minimum standards for municipal emergency management programs. This role also leads the provincially mandated (Ontario Regulation 380/04) annual review and revisions of the all Hazards Identification and Risk Assessment (HIRA) and Critical Infrastructure List to ensure that the City meets its mandatory requirements.

This role collaboratively works with all City of Burlington departments to enhance the Corporation's capacity to effectively prepare, respond, mitigate and recover from a significant event/disaster. The position is also responsible for ensuring that the City of Burlington and its emergency operations facilities are in a continuous state of readiness and leads the development and review of corporate emergency response plans, hazard specific sub-plans and multi-departmental procedures, ensuring identified high risk hazards, critical infrastructure vulnerabilities and special procedures, such as mass evacuations and public notifications are addressed.

There would be value in conducting an analysis of the work being completed by the Business Continuity and Emergency Planning Coordinator to ensure it aligns with and supports the City's emergency planning program, including the role's reporting requirements within the BFD and the City.

It is recommended that a review be completed of the Business Continuity and Emergency Planning Coordinator's role within the corporation to better assess alignment with and support for the city-wide emergency planning program.

10.3 Municipal Emergency Planning Summary and Recommendations

Each municipality is responsible for demonstrating their compliance with the annual requirements set out in the EMCPA. The City of Burlington received a letter of compliance from the Ministry of the Solicitor General for 2020.

10.3.1 Goals, Targets, and Recommendations

Goal #6: City of Burlington provides municipal emergency planning services with consideration to its legislative requirements, industry best practices, and future growth.

Target #6A: Maintain legislative compliance while preparing for future growth and proactively preparing for potential future emergencies.

Recommended Action: That a review be completed of the Business Continuity and Emergency Planning Coordinator's role within the corporation to better assess alignment with and support for the city-wide emergency planning program. (10.2.5)

11.0

Communications Division

The Communications Division is responsible for receiving and recording all fire alarms, switchboard activities and other emergency calls as well as dispatching the proper apparatus and equipment in accordance with standard operating procedures. A communications division facilitates a vital role in connecting a City's citizens and its first responders during emergencies. In addition to providing emergency call taking and fire dispatching for the City of Burlington and its fire service, this division also provides communication services for the Town of Halton Hills and the Town of Oakville.

This section assesses various components of the communications division including the communications workspace, current communications systems and technologies, available staffing resources and training, and applicable communications benchmarks.

11.1

Dispatch Agreement

As per the triparty dispatch agreement dated November 2018, the City of Burlington provides 9-1-1 emergency incident call taking and fire dispatching services to the Town of Oakville and the Town of Halton Hills. As a service provider, the City must recognize the risks associated with providing these services. In our experience, being a service provider to other municipalities requires an added degree of due diligence on behalf of the service provider (i.e., City of Burlington). It should be considered a priority that the operations and provision of services are consistent with the service agreements in place with each municipality. The 2018 Dispatch Triparty Agreement outlines that NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems as the industry best practices performance targets. This should ensure that all staff assigned to this division are fully qualified and competent in providing these services.

In our view, the risk associated with providing these services to other municipalities can in part be mitigated by ensuring all communications centre personnel are qualified to NFPA 1061, Level II. This is currently being practiced by the BFD whereby all telecommunicators are trained and qualified to NFPA 1061, Level II.

The City of Burlington has cultivated a dispatch model based on partnerships with neighbouring communities that reflects current municipal best practices. The City

should continue to explore additional agreements with surrounding municipalities to expand the provision of fire dispatch services as a potential fiscal cost avoidance strategy and improved operations opportunity.

11.2 Communications Audit Report

The City of Burlington Auditor authored a Fire Emergency Communications audit on March 1, 2019, which included auditing call volumes and work performed for the period of January 1, 2016 to October 31, 2018.

The audit identified recommendations related to SOGs, IT coordination, data and trends analysis, communication resources training and records management. Such recommendations dovetail with the findings of this FMP including ensuring appropriate training records management, resources, and the need to review and update applicable SOGs.

There was also a finding to ensure an alternate site in support of service continuity is completed. As indicated by BFD, progress has been made on most of the recommendations including the completion of an alternate site.

11.3 Current Communications Workplace, Systems and Technologies

Physical access to the Communications Centre is defined through BFD SOG 1100-065 and controlled through a security card access system. The current access permissions allow 24/7 access to Public Safety Telecommunicators.

The role of technology within a Communications Division is fundamental to its function. The BFD uses a Computer Aided Dispatch (CAD) software system that provides all dispatching components for BFD, Halton Hills Fire Department and Oakville Fire Department. The system was installed in 2018, and performs the following functions:

- Intake of emergency calls
- Dispatching of apparatus
- Relocation of apparatus
- Monitoring of all radio transmissions
- Handles non-emergency calls
- Station mapping
- Monitoring of hydrant status and road closures

- Documenting alarm system testing
- Receives and processes non-emergency requests for service from the public, emergency agencies and other public safety services

Communication division activities are supported by several additional interfacing systems including:

- Station Alerting
- Multimedia emergency call recording
- Automatic number identification and automatic location identifier
- Records Management Systems
- Geomatics and Geographic Information Systems (GIS)
- Mobile Data Terminals
- Property Records

Radio technology includes P25 digital radio system that enhances delivery of public safety emergency services for Halton Hills Fire Department, Oakville Fire Department and Halton Regional Police. This system is also used to page volunteer firefighters.

The 2019 Audit Report recommended that the BFD implement a standardized process and tools for reporting, tracking, recording resolution, and communicating to support trend analysis and information sharing for all service clients. Consultation with BFD personnel indicates that IT resources are working with BFD personnel to create, and improve this process.

All corporate technologies are installed and maintained by the City of Burlington Information Technology (IT) department. All systems and hardware used to dispatch fire resources is owned and operated by the City of Burlington Fire Department.

11.3.1

Next Generation 9-1-1

The Canadian Radio-television and Telecommunications Commission (CRTC) has announced its determinants on the implementation and provision of N.G. 9-1-1 networks across Canada. Telecom Regulatory Policy CRTC 2017-182 released on June 1, 2017 indicates the following:

“Canadians depend on the provision of reliable and effective 9-1-1 services to seek help in an emergency. As technology and consumers’ needs evolve, so do

consumers' expectations related to 9-1-1 services. In the coming years, telecommunications networks across Canada, including the networks used to make 9-1-1 calls, will continue to transition to Internet Protocol (IP) technology. This will enable Canadians to access new, enhanced, and innovative 9-1-1 services with IP-based capabilities, referred to as next-generation 9-1-1 (NG 9-1-1) services. For example, Canadians could stream video from an emergency incident, send photos of accident damage or a fleeing suspect, or send personal medical information, including accessibility needs, which could greatly aid emergency responders.

In this decision, the Commission is setting out its determinations on the implementation and provision of NG 9-1-1 networks and services in Canada. This will require coordination and collaboration between numerous stakeholders, including the Commission; telecommunications service providers that provide 9-1-1 services (TSPs); 9-1-1 network providers; the CRTC Interconnection Steering Committee (CISC); federal, provincial, territorial, and municipal governments; emergency responders; and public safety answering points (PSAPs). As such, in this decision, the Commission is making a number of recommendations in which all stakeholders will have a role to play, including the establishment of a national PSAP and emergency responder coordinating body.”⁴⁴

Our research indicates that the technologies in place are currently serving the fire communications and dispatching needs of the BFD hardware and/or application upgrades may be necessary to facilitate Next Generation 9-1-1 (N.G. 911) requirements or to provide further capacity if communications services were to be further extended to other municipalities. It is important that the BFD continue to manage the implementation of Next Generation 9-1-1 and report to Council on the status and potential impacts on the BFD. We understand the municipality has a working group to address this implementation. All funding for additional resources will be submitted to Council as part of the budget process. In addition, costs will be shared as part of the Triparty Dispatch Agreement.

⁴⁴ Telecom Regulatory Policy C.R.T.C. 2017-182

11.4

Existing Communication Division Staff Resources

The Communications overseen by the Deputy Fire Chief of Communications, Mechanical and Critical Infrastructure and is comprised of one Public Safety Communications Supervisor, ten (10) full-time Public Safety Telecommunicators (PSTs), six (6) part-time PSTs, who are supported by one IT Systems Coordinator and one C.A.D. Application Analyst.

The Public Safety Communications Supervisor is responsible for ensuring that all system malfunction(s) have been reported to the appropriate personnel, in a timely manner and when required, conduct and document a post-incident report including any findings, outcomes, personnel and/or vendors, and any continuous improvement recommendations as an outcome of the review. This person is also responsible for updating SOGs as needed to ensure systems troubleshoot procedures and notifications remain current and accurate.

PSTs work 12-hour shifts on a four day-on and four day-off rotation of days and nights, and provide dispatching services 24 hours a day, seven days a week.

Supervision of the communications centre during the normal business week daytime hours is provided by the Communications Supervisor. In the absence of the Communications Supervisor and specifically after normal hours of work, supervision of the communication centre is provided by the Platoon Chief on shift, in addition to managing the on-duty fire suppression staff under their direct responsibility and responding to emergency incidents.

Due to the nature of the work within the Communications Centre, there can be times when the Telecommunicators may require additional direction, and/or support to manage an evolving emergency incident or technology issue. Within the current supervisory model, this requires contacting the on-duty Platoon Chief who may already be engaged at an emergency incident. Although the Platoon Chiefs are providing the required OHSa supervisory role, there may be limited direct access to them by the on-duty Telecommunicators.

The assignment of the supervisory role should be included in the workload demand analysis being conducted for all divisions, including the training requirements and

supervisory assignments. Further discussion on training of Communications Division staff is in the following section.

11.5 Training of Communications Staff

In addition to providing emergency call taking and fire dispatching for the BFD, this division is responsible for providing communications services to other municipalities that places an added degree of due diligence on the skills and competencies of staff within this division. Ensuring that the operations, and provision of services are consistent with the service agreements in-place with each municipality, and reflect current industry best practices, should be considered a high priority.

The training of staff assigned to the role of a communicator within an Ontario fire department have been the focus of several investigations over the past decade. In our view, this supports a heightened awareness of the municipality's due diligence to ensure all staff within this division are trained and qualified to recognized industry standards. In our view, at a minimum, this means that all staff assigned to the role of communicator be qualified to the NFPA 1061: Standard for Professional Qualifications for Public Safety Telecommunications Personnel – Level I, with the goal of achieving the Level II. This includes the part-time dispatchers.

Research into preparing this FMP indicates that PSTs are required to complete Association of Public-Safety Communications Officials (APCO) Fire Service Communicator training as a prerequisite for NFPA 1061 which the department began to implement in 2016. Telecommunicators also receive hazardous materials awareness training.

The qualification and certification of fire dispatchers is a warranted industry best practice to enhance the efficiency and effectiveness of delivering emergency call taking and fire dispatching. It is also a warranted industry best practice to minimize any potential liability on behalf of the City for providing these services both internally and externally to other municipalities. BFD should ensure that all personnel who are assigned the role of PST be trained and qualified to NFPA 1061, Levels I and II. A Public Safety Communications Supervisor should be qualified to NFPA 1061 Levels I and II as well as the additional job performance requirements as outlined in Chapter 8 of NFPA 1061.

11.6

Communications Performance Benchmarks

The applicable performance benchmarks for emergency alarm processing for the BFD are contained within the NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems (2019 Edition). This standard includes a performance benchmark for the processing of the highest prioritization of emergency incidents to be completed within 64 seconds, 90% of the time. The BFD currently targets this performance benchmark. According to the 2018 Triparty Dispatch Agreement between the City of Burlington, the Town of Oakville and the Town of Halton Hills, all parties acknowledge that the performance target for providing emergency alarm handling will be in accordance with the guidelines outlined in NFPA 1221.

As presented in **Section 8.7.3**, the BFD consistently exceeded the 64 second 90th percentile performance benchmark for fire suppression incidents. On aggregate over the five years, the department exceeded the 90th percentile performance benchmark for this type of call by 43 seconds.

It is recommended that the BFD continue to monitor and strive for continuous improvement in its alarm handling performance and compliance with the applicable NFPA 1221 call processing performance targets.

In **Section 8.0** it was recommended that BFD establish Council-approved performance targets for dispatch and report to Council annually, with the ultimate targets of reducing overall total response time.

11.7

Communication Division Summary and Recommendations

The delivery of fire dispatching systems is important to the overall approach to delivering fire services to a community. Incidents start with the call being received by the dispatch centre, information gathered, processed and fire resources are dispatched to the incident. Time is critical to mitigating emergencies and fire communication is an integral part to reducing these times.

BFD provides dispatch services to the City of Burlington and other jurisdictions which reinforces the importance of having up-to-date SOGs and training requirements consistent with industry best practices and due diligence considerations, 24/7 supervision, appropriate records management, analytics and trend analysis for

continuous improvement, and a continued proactive transition for Next Generation 9-1-1. The following outlines the goals, targets and recommendations for the Communications Division.

11.7.1 Goals, Targets, and Recommendations

Goal #7: Burlington Fire Department provides public safety communications services that continues to meet the need of a growing municipality and for its municipal clients.

Target #7A: Improve BFD call answering and call processing times to meet the guidelines of applicable NFPA standards and proposed performance targets, with the ultimate target of reducing overall total response time.

Recommended Action: That the BFD continue to monitor and strive for continuous improvement in its alarm handling performance and compliance with the applicable NFPA 1221 call processing performance targets. (Section 11.6)

Implementation Plan

The goals, targets, and recommended actions of this FMP have been developed in consideration of the strategic priorities identified within this plan. This FMP includes an implementation plan that provides a recommended schedule as follows:

1. Immediate Priority – implement in next five years (by 2027)
2. Long-Term Strategy – six to ten years or more
3. Ongoing Program Initiatives – implemented by the department to align with current standards and continuous improvement initiatives

The estimates for capital costs (i.e., equipment and facilities) and operating costs (i.e. firefighters) provided are based on comparators and the experience of the consultants and therefore are ballpark estimates. This will require further review and revision based on current costs provided during the budget process. Any costing for operating and capital funding will be submitted to council as part of the annual budget process for consideration, as part of this process. The Fire Chief will continue to make recommendations to council as part of long-term strategies.

As part of the implementation of this FMP. It is recommended that Council approve the strategic priorities of this plan in line with fiscal needs of the City and as part of the budget process. The following strategic priorities support a recommended strategic framework for the delivery of fire services within the City of Burlington to meet current needs and community growth:

- I. **As required by Ontario Regulation 378/18: Community Risk Assessment the City of Burlington is committed to utilizing community fire risk analysis to inform all decisions associated with the delivery of fire protection services within the City of Burlington.**
- II. **The Burlington Fire Department will prioritize the optimization of the first two lines of defence, including public education and fire prevention, and the utilization of fire safety standards and fire code enforcement as the foundation of providing a comprehensive fire protection program within the City of Burlington.**

- III. The City of Burlington will continue to prioritize strategies that support the sustainability of a 'composite fire department' and the delivery of fire protection services that provide the most effective and efficient level of services resulting in the best value for the community.
- IV. The City of Burlington and the Burlington Fire Department will prioritize the fire protection needs to meet the planned growth and intensification needs of the City.

12.1 Administration Division

GOAL #1: Burlington Fire Department continues to provide the leadership structure, leadership capabilities, and applicable documentation and systems while meeting the needs of a growing and evolving City.

Target #1A: Enhance the existing organizational structure, including additional staff resources within the fire management team to support community growth and expanding workloads.

Recommended Action: That the Fire Chief monitor the staffing needs of the department and report any recommended changes to council as part of strategies to enhance staffing to support the fire service as a whole. (Section 5.3.6)

Proposed Schedule: Immediate Priority

Recommended Action: That a workload analysis be conducted for all divisions of the BFD to understand the current and future workload required to effectively and efficiently meet the needs of the department's service delivery and community risk reduction strategies. (Section 5.3.6)

Proposed Schedule: Immediate Priority

Recommended Action: That the Burlington Fire Department consider a review and update the existing Mission and Vision statements so that they are meaningful to fire personnel and represents the services provided to the community. That Fire Chief will report back to council for information and reference. (Section 5.4)

Proposed Schedule: Immediate Priority

Recommended Action: That the BFD conduct a comprehensive volunteer firefighter review including recruitment and retention strategies, the volunteer promotional policy and other initiatives. (Sections 5.11, 7.12.3, 8.12.2.2, 8.12.3)

Proposed Schedule: Immediate Priority

Target #1B: Maintain up-to-date documentation and procedures for all by-laws, agreements, Standard Operating Policies (SOP), Standard Operating Guidelines (SOG), and job descriptions.

Recommended Action: That the existing career path guide be reviewed and updated using current best practices; to include all divisions within the BFD and the required skills, knowledge, and education; and with reference to NFPA standards, where applicable. (Section 5.3)

Proposed Schedule: Immediate Priority

Recommended Action: That a by-law appointing the Deputy Fire Chief of Operations and the Deputy Fire Chief of Communications, Maintenance and Critical Infrastructure be brought forward to Council for approval. This will ensure that the applicable legislative responsibilities of the Fire Chief are delegated when required. (Section 5.3.2 and 5.3.3)

Proposed Schedule: Immediate Priority

Recommended Action: That the Establishing and Regulating By-law be reviewed and updated, including adding all of the service areas provided by the BFD, for council approval. (Section 5.5.1)

Proposed Schedule: Immediate Priority**This is a Council Recommendation**

Recommended Action: That the existing tiered response agreement be reviewed with emergency agency partners and updated in consideration of pending CACC protocol changes, advancements in technology, review of

the Establishing and Regulating Bylaw and community needs. That the Fire Chief report back to council, as required. (**Section 5.6.3**)

Proposed Schedule: Immediate Priority

Recommended Action: That a review of all existing partnering agreements be undertaken on a regularly scheduled basis cognizant of the CRA and consistent with any changes to the Establishing and Regulating By-law. Fire Chief to report back to council, as required. (**Section 5.6.5**)

Proposed Schedule: Immediate Priority

Recommended Action: That the BFD develop a records management policy, supporting the City's Records Retention Schedule, outlining internal requirements and accountability for all department records. (**Section 5.10**)

Proposed Schedule: Immediate Priority

12.2

Fire Prevention and Public Education Division

Goal #2: The Burlington Fire Department will enhance its fire prevention and public education programs based on the outcomes of a Community Risk Assessment and its' Community Risk Reduction Strategies. Consideration should be given to increase resource the division as the community grows, in support of optimizing the first two lines of defence.

Target #2A: Review and update the fire prevention and public education programs and policies in alignment with the community risks reduction strategies and the guidance provided in NFPA 1730.

Recommended Action: That the current inspection cycles approved by Council be reviewed based on a building/risk profile versus an occupancy/building type, and that the review include a comparison to NFPA 1730 as part of a risk reduction strategy. That the Fire Chief report back to council on any recommended enhancements to the existing council approved inspection cycles to support CRRP. (**Section 6.1.1**)

Proposed Schedule: Immediate Priority

This is a Council Recommendation

Recommended Action: That the BFD review existing policies and establish new policies specific to fire prevention mandatory inspection types and cycles, and to consider including reference to the Establishing and Regulating by-law in the Policy, as approved by council. (Section 6.4)

Proposed Schedule: Immediate Priority

This is a Council Recommendation

12.3

Training Division

Goal #3: BFD will maintain a training program that supports all functions of the organization and at the appropriate levels based on the services provided as defined in the Establishing and Regulating By-law.

Target #3A: Follow industry best practices regarding training for all department staff and rank structure.

Recommended Action: That the BFD develop a policy that references the appropriate professional standards and training, aligned with services levels as defined through the Establishing and Regulating By-law, and to use this to inform a Comprehensive Training Program. (Section 7.4)

Proposed Schedule: Immediate Priority

Recommended Action: That the BFD develop a comprehensive training program that identifies a five year plan for achieving and maintaining the identified training, performance targets, and references an updated training policy, for all full-time and volunteer firefighter positions. (Section 7.4)

Proposed Schedule: Immediate Priority

Target #3B: Ensure that there are appropriate training facilities and equipment available to support the defined training needs.

Recommended Action: That the BFD further investigate the potential for participating in a regional training centre or the replacement/relocation of the existing facility, within the city's budget process, as required. (Section 7.11)

Proposed Schedule: Immediate Priority**12.4****Operations Division**

Goal #4: Burlington Fire Department will provide emergency response services in alignment with its local needs and circumstances as confirmed through a Community Risk Assessment and with consideration to health and safety, industry best practices, future growth, and the services that provide the most effective and efficient level of services resulting in the best value for the community.

Target #4A: Strive for continuous improvement through monitoring emergency response performance as compared to applicable industry best practice and with consideration to the risk of Group C – Residential occupancies.

Recommended Action: That the BFD establish fire suppression performance targets for the defined urban area based on NFPA 1710 and to use them to monitor and report to Council and the community, including:

- a. The proposed fire suppression performance targets for the defined urban area being:
 - i. Initial Arriving Company – Four firefighters arriving on scene within a four minute travel time to 90% of fire suppression incidents.
 - ii. Single-Family Dwelling – Initial Full Alarm Assignment – 16 firefighters (17 if an aerial is used) arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type
 - iii. Apartment – Initial Full Alarm Assignment – 25 firefighters (26 if an aerial is used arriving on scene within an eight minute travel time to 90% of fire suppression incidents in this occupancy type
 - iv. High-Rise – Initial Full Alarm Assignment – 38 firefighters (39 if building is equipped with a fire pump) arriving on scene within a ten minute and ten second travel time to 90% of fire suppression incidents in this occupancy type
 - v. Dispatch time: 64 seconds or less for at least 90% of the alarms

- vi. Turnout Time: 80 seconds or less for all fire-related and special operations incidents
- vii. Total response time of 384 seconds for an initial arriving company and 644 seconds for an initial full alarm (except for high rise incident which shall be 754 seconds) to 90% of fire suppression incidents. **(Section 8.6.2)**
- b. That the BFD establish fire suppression performance targets for the defined rural area based on NFPA 1720 and to use them to monitor and report to Council and the community, including: Rural Demand Zone – 6 firefighters arriving on scene within a 14 minutes turnout time + travel time to 80% of fire suppression incidents in the defined rural area. **(Section 8.6.3)**
- c. That the BFD working with the City’s Legal and Community Planning departments monitor, update and implement the recommendations of this Fire Master Plan, as the municipal comprehensive review process and additional City planning projects unfold, whereby more detailed and refined information will become available in regard to growth areas, population projections, and built form. The Fire Chief will provide additional information and requests to support resource needs for growth following the City’s established processes. **(Section 8.10)**

Proposed Schedule: Immediate Priority

This is a Council Recommendation

Recommended Action: That the BFD identify and implement strategies to improve the department’s dispatch time and turnout time. This may require a more in-depth review of each component step in the dispatch and turnout processes to assess where improvements may be possible. **(Section 8.7.7)**

Proposed Schedule: Immediate Priority

Recommended Action: That the BFD ensure the automatic aid agreement in place with the City of Hamilton, the Town of Milton and the Town of Oakville reflect the changes proposed in this Fire Master Plan and the response needs of the City. **(Section 8.12.2.4)**

Proposed Schedule: Immediate Priority

Target #4B: Move towards the fire suppression staff resources that reflect the needs and circumstances of the community.

Recommended Action: That the BFD establish a long-term hiring strategy in alignment with community and station growth, industry leading practices, Establishing and Regulating by-law service delivery, and performance targets. The Fire Chief to submit requests for increased resource needs as part of the City's established processes, including:

- a. Hiring eight firefighters to increase the existing total career suppression complement from 172 to 180 firefighters (i.e. 45 firefighters per platoon) in order to maintain the 35 firefighters on-duty per platoon, as an immediate priority. This will largely support staffing at Station 8. **(Section 8.11.1)**

Proposed Schedule: Immediate Priority

Estimated Operating Cost: \$1,000,000 (Firefighters)

Estimated Capital Costs: \$44,000 (Protective Clothing)

This is a Council Recommendation

- b. Hiring eight firefighters to increase the on-duty staffing on the Rescue vehicle in Station 1 from two to four firefighters as a priority. **(Section 8.12.1)**

Proposed Schedule: Immediate Priority

Estimated Operating Cost: \$1,000,000 (Firefighters)

Estimated Capital Costs: \$44,000 (Protective Clothing)

This is a Council Recommendation

- c. Hiring 20 firefighters in advance of opening the proposed new Station 9 in downtown Burlington. **(Section 8.12.1)**

Proposed Schedule: Long Term Strategy

Estimated Operating Cost: \$2,500,000 (Firefighters)

Estimated Capital Costs: \$110,000 (Protective Clothing)

This is a Council Recommendation

Recommended Action: That the BFD investigate increased fire protection in sub-districts currently classified as “unprotected” by the Fire Underwriters’ Survey, including an expanded superior tanker shuttle accreditation and the use of updated automatic aid agreements. **(Section 8.12.2.4)**

Proposed Schedule: Immediate Priority

Target #4C: Plan for required station replacements and prepare for growth by planning for the need for increased fire suppression resources.

Recommended Action: Based on monitoring the actual timing of growth and with consideration to an updated Community Risk Assessment, develop and implement plans to respond to forecast growth:

- a. Working with other municipal departments, identify and potentially acquire a site for the reconstruction/relocation of existing Station 3 in the vicinity of Waterdown Road/Plains Road. **(Section 8.12.1)**

Proposed Schedule: Immediate Priority

Estimated Capital Costs: \$4,000,000 (Building only)

This is a Council Recommendation

- b. Working with other municipal departments, identify and acquire a site for the construction of a new downtown Station 9 as a priority over the next three years. **(Section 8.12.1)**

Proposed Schedule: Immediate Priority

Estimated Capital Costs: \$4,000,000 (Building only)

This is a Council Recommendation

- c. On an annual basis, monitor the implementation and recommendations of this FMP, with consideration to the pace, location, and nature of the anticipated growth and update the FMP as needed, at least every five years. **(Section 8.12.1)**

Proposed Schedule: Immediate Priority

Estimated Capital Costs: \$150,000

This is a Council Recommendation

- d. Begin to plan for a longer-term relocated Station 4 in the vicinity of New Street, west of Appleby Line and for a new Station 10 along Fairview Road, between Walkers Line and Appleby Line by identifying and acquiring potential sites. **(Section 8.12.1)**

Proposed Schedule: Long Term Strategy

This is a Council Recommendation

- e. Monitor growth and development in North Aldershot, including the Aldershot M.TSA, for the need to add additional resources, likely beyond the horizon of this plan. As development plans become clearer, it is appropriate to consider adding additional resources to Station 3 in the form of a rescue vehicle, initially staffed with two firefighters. This would require the addition of 12 firefighters to staff the vehicle on a 24/7 basis. **(Section 8.12.2.4)**

Proposed Schedule: Long Term Strategy

This is a Council Recommendation

12.5 Maintenance Division

Goal #5: The Burlington Fire Department will provide a maintenance program for apparatus, equipment and facilities that ensures the appropriate quantity, quality, and reliable condition to meet the needs of the community and the operations of the fire department.

Ongoing initiatives, including the Career Paths program, and plans to implement identified software solutions for enhanced vehicle maintenance record keeping and inventory control for all fleet, equipment and facilities, will serve the department well as part of continuous improvement. **(Section 9.8)**

12.6 Municipal Emergency Planning

Goal #6: City of Burlington provides municipal emergency planning services with consideration to its legislative requirements, industry best practices, and future growth.

Target #6A: Maintain legislative compliance while preparing for future growth and proactively preparing for potential future emergencies.

Recommended Action: That a review be completed of the Business Continuity and Emergency Planning Coordinator's role within the corporation to better assess alignment with and support for the city-wide emergency planning program. (Section 10.2.5)

Proposed Schedule: Immediate Priority

12.7

Communications Division

Goal #7: Burlington Fire Department provides public safety communications services that continues to meet the need of a growing municipality and for its municipal clients.

Target #7A: Improve BFD call answering and call processing times to meet the guidelines of applicable NFPA standards and proposed performance targets, with the ultimate target of reducing overall total response time.

Recommended Action: That the BFD continue to monitor and strive for continuous improvement in its alarm handling performance and compliance with the applicable NFPA 1221 call processing performance targets. (Section 11.6)

Proposed Schedule: Immediate Priority