Submitted to: The Corporation of the Town of Innisfil

FIRE MASTER PLAN

Final Report
May 2013

Submitted by: DILLON CONSULTING

Town of Innisfil

Fire Master Plan Final Report

May 2013

Our File: 12-6085

Prepared By:

Dillon Consulting Limited

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

The Town of Innisfil is located in Simcoe County, south of the City of Barrie and north of the City of Toronto, on the western shore of Lake Simcoe. It is a predominantly rural and agricultural area which has been experiencing residential infill development and growth as a result of its proximity to Barrie and the Greater Toronto Area (GTA). It also experiences population increases during summers and weekends as a result of cottage residents and outdoor recreational tourism. Its current population is approximately 33,000 people (2011 Census), which has grown by just over 6% since 2006. This growth has been on-going, as the Town experienced an approximate 9% growth rate between 2001 and 2006. There are several urban settlements and villages within the municipality, such as Cookstown, Alcona, Stroud, Lefroy, Churchill, Fennell's Corners, Innisfil Heights, Gilford and Sandy Cove.

The Innisfil Fire and Rescue Service (IFRS) is a composite fire department currently operating from four fire stations. Existing staffing consists of a full-time Fire Chief, Deputy Fire Chief, Fire Prevention Officer and Administrative Coordinator. Suppression staff includes 12 full-time firefighters and a complement of 96 volunteer firefighters. IFRS provides the following services to the Town of Innisfil:

- Fire Suppression
- Fire Prevention
- Public Education
- Medical Response
- Ice/Water Rescue
- Hazardous Material Response (County CBRN)
- Rescue and Extrication

The purpose of this comprehensive Fire Master Plan is to guide the IFRS through the next 10 to 20 years of population and municipal growth. The study reviewed the overall operations of the department and assessed the current resources against existing and future needs. This report is intended to serve as the strategic planning framework to guide policy, organizational, capital and operational decisions and ensure that current and future needs are met in a fiscally feasible and responsible manner. The plan has also been created to provide flexibility, in order to adapt the future community needs and circumstances. It is recommended that the plan be reviewed and updated every five years to ensure it best reflects the conditions for that time period.

The following report outlines the results of the departmental review, considering industry best practices, guidelines and standards as well as current legislation. The report provides recommendations for the IFRS to guide it over the next ten years, with considerations for the twenty year horizon. The Fire Master Plan reviewed the following department components and operations:

- Administration;
- Fire prevention;
- Public education;
- Training;
- Staffing and agreements;
- Station locations;
- Emergency response;
- Mechanical, apparatus and equipment; and
- Emergency planning.

1.1 Innisfil Fire and Rescue Service History

Fire services in Innisfil have a history spanning over 60 years. The original Innisfil Fire and Rescue Service was established in the Village of Stroud in 1952. The first fire hall was located together with the Town Office at Victoria Street and Yonge Street. The department started with 20 volunteer firefighters, led by a combined Fire Chief and Police Chief. The department expanded 15 years later, with a second fire hall (current Station 2) built in Lefroy on Ardill Street. Another 20 volunteer firefighters were assigned to this station. Previously, fire trucks were based out of Albert's Garage, but moved to the new Lefroy Fire Hall. The department assigned a fulltime Fire Chief two years later in 1969.

The current headquarters for Innisfil Fire and Rescue Service are housed in the Alcona Fire Station (Station 1), which was constructed in a 1988 expansion. This expansion brought an additional 20 volunteer firefighters to the department. The 1991 amalgamation of Cookstown included the Cookstown Fire Station (currently Station 4) and complement of 20 volunteer firefighters. In 2004, Stroud Station (Station 3) was constructed as a joint project with County of Simcoe Paramedic Services. It serves as a combined fire and ambulance station. The station was assigned 20 volunteer firefighters at the time of opening.

2.0 LEGISLATION

2.1 Legislation Fire Prevention and Protection 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). The FPPA states that, *"every municipality shall, 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."*

Developing a Fire Master Plan is recognized as an appropriate strategy in assessing the needs and circumstances within a specific community to assist local Council's in developing an overall fire protection model for their community.

To further assist communities the Office of the Fire Marshal, Ontario (OFM) has developed the Comprehensive Fire Safety Effectiveness Model. The model identifies "*three lines of defence"* that can be utilized in responding to local community needs. The three lines of defence include:

I. Public Education and Prevention;

II. Fire Safety Standards and Enforcement; and

III. Emergency Response.

To further assist municipalities the OFM has identified within previous reports the following further description of each line of defence:

I. 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; and

II. Fire Safety Inspections 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; and

III. Emergency Response (Suppression):

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.

The ultimate goal of any fire department is to prevent a fire. In utilizing these three lines of defence the Comprehensive Fire Safety Effectiveness Model emphasises the importance and value of preventing a fire. This is important from both an economic and life safety perspective. The model also recognises that developing programs and providing resources to effectively implement the first line of defence (a proactive public education and prevention program) can be an effective strategy to reduce and potentially minimize the need for the other lines of defence. The following are applicable sections of the FPPA for reference purposes:

PART I: DEFINITIONS	1.(1) In this Act, "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
PART II: RESPONSIBILITY FOR FIRE PROTECTION SERVICES **Municipal responsibilities**	2.(1) Every municipality shall (a) establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention, and (b) provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.
Services to be provided	(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
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.
Fire chief, municipalities **Responsibility to council**	6.(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
PART III: FIRE MARSHAL **Powers of Fire Marshal**	9.(1) the Fire Marshal has the power, (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 (d) to issue guidelines to municipalities respecting fire protection services and related matters
Duties of Fire Marshal	9.(2) It is the duty of the Fire Marshal, (b) to advise municipalities in the interpretation and enforcement of this Act and the regulations (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

2.2 Office of the Fire Marshal, Ontario

As indicated above, the OFM has a role to both assist municipalities through interpretation and enforcement of the FPPA, and to develop training programs and evaluation systems.

One of these roles includes the review of compliance with the minimum requirements of a Community Fire Safety Program, which must include:

- ✓ ***a smoke alarm program with home escape planning;***
- ✓ ***the distribution of fire safety education material to residents/occupants;***
- ✓ ***inspections upon complaint or when requested to assist with code compliance (including any necessary code enforcement); and***
- ✓ ***a simplified risk assessment.***

The OFM utilizes Public Fire Safety Guidelines as one of the primary ways of providing interpretation and guidance to municipalities. "*PFSG 00-000-01 Framework for Setting Guidelines within a Provincial-Municipal Relationship"* provides information that is relevant to the analysis and recommendations of this report.

An excerpt from the background section of PFSG 00-000-01 provides further clarification to the OFM interpretation of the FPPA and municipalities responsibilities:

> "*Municipalities are compelled to establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention. The act also states that municipalities are responsible for arranging such other fire protection services as they determine may be necessary according to their own needs and circumstances. The relationship between the province and municipalities is based on the principle that municipalities are responsible for arranging fire protection services according to their own needs and circumstances".*

A further excerpt from the principles section of this PFSG provides even further clarity to municipalities responsibilities for providing fire protection services:

1. *Local needs and circumstances vary widely across the province. Therefore, the measures required to address these needs and conditions will also vary.*
2. *There are many ways in which individual needs and circumstances can be addressed. Therefore, municipalities require flexibility to employ different strategies to achieve similar objectives.*
3. *Local council, in consultation with the fire chief, will determine the extent to which their needs and circumstances will be addressed. Some may choose to address specific risks more comprehensively than others. Provided serious threats to public safety are addressed, this is a reasonable and legitimate exercise of municipal responsibility.*

2.3 Occupational Health and Safety Act

The *Occupational Health and Safety Act, R.S.O. 1990* (OHSA) requires every employer to, *"take every precaution reasonable in the circumstances for the protection of the worker".* 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 firefighters-specific safety issues within Ontario.

Where 20 or more workers are regularly employed at a workplace, the OHSA requires the establishment of a Joint Health and Safety Committee (JHSC). The committee must hold regular meetings including the provision of agendas and minutes.

Firefighter safety must be a high priority in considering all of the activities and services to be provided by a fire department. This must include the provision of department policies and procedures, or Standard Operating Procedures (SOPs) that are consistent with the direction of the *OHSA Section 21 Guidance Notes* for the fire service.

3.0 COMMUNITY RISK PROFILE

The Office of the Fire Marshal, Ontario's (OFM) *Fire Risk Sub-model*[1] introduces the importance of community risk in the following paragraph:

> "*Assessing the fire risk within a community is one of the seven components that comprise the Comprehensive Fire Safety Effectiveness Model. It is the process of examining and analyzing the relevant factors that characterize the community and applying this information to identify potential fire risk scenarios that may be encountered. The assessment includes an analysis of the likelihood of these scenarios occurring and their subsequent consequences.*"

Community fire risks are further explained in detail within the OFM's *Fire Risk Sub-model* as follows:

> *"The types of fire risks that a community may be expected to encounter are influenced by its defining characteristics. For example, a "bedroom community" presents a different set of circumstances over one that is characterized as an "industrial town". Communities that are distinguished by older buildings will pose a different set of concerns over those that are comprised of newer buildings constructed to modern building codes. Communities populated by a high percentage of senior citizens present a different challenge over ones with a younger population base.*
>
> *Assessing fire risk should begin with a review of all available and relevant information that defines and characterizes your community. Eight key factors have been identified that contribute to the community's inherent characteristics and circumstances. These factors influence events that shape potential fire scenarios along with the severity of their outcomes:*
>
> - *Property Stock*
> - *Building Height and Area*
> - *Building Age and Construction*
> - *Building Exposures*
> - *Demographic Profile*
> - *Geography/Topography/Road Infrastructure*
> - *Past Fire Loss Statistics*
> - *Fuel Load*

Utilizing the framework provided within the OFM's Fire Risk Sub-model provides the opportunity to assess the potential fire risk scenarios that may be present by creating a Community Risk Profile. The profile can then be used to assess the current level of fire protection services provided, and identify where if any potential gaps exist, or areas that a municipal Council may want to consider in determining its own needs and circumstances as defined by the FPPA.

This section contains a summary of the observations from each of the categories contained within the community risk profile and assessment. The detailed Community Risk Assessment is contained within ***Appendix A.***

[1] Source: *Comprehensive Fire Safety Effectiveness Model, Fire Risk Sub-Model,* June 2009 Office of the Fire Marshal, Ontario

3.1 Summary of Community Risk Profile

The Town of Innisfil's risk profile represents similar levels of risk that would be expected in comparable municipalities within the Province of Ontario. These include smaller urban centres surrounded by large agricultural and environmentally protected areas (including shoreline along the Western edge of Lake Simcoe) forming a larger community. The Town's road network layout is primarily a grid pattern of arterial rural roads and local roads which provide access to the rural residential locations. The settlement areas within the Town are well served and connected by the road network.

Population and employment estimates predict that Town of Innisfil will experience rapid population growth of 54.3% over the next 10 years, representing approximately 5.4% annual growth. This growth is expected to be supported by ongoing residential development, as housing units are predicted to increase by approximately 37.1 % over the next 10 years, or 3.7% per year.

Residential occupancies dominate the community at 96.3% of the building stock, reflecting the profile of a bedroom community. The second largest percentage of property stock (2.7%) consists of commercial buildings.

Within the province residential occupancies have historically accounted for approximately 71% of all structure fires and 86% of all fire related deaths. For the five year period from 2007 to 2011 the Town of Innisfil reported 51 fires of which 86% occurred in Group C - Residential occupancies, which is slightly higher than the provincial average.

The analysis of the buildings within the Town indicates that building height and area represent a minimal risk. This includes all occupancy classifications. There are a limited number of large area (by square footage) buildings. These include a few retail/entertainment buildings that are frequented by clientele that are unfamiliar with the emergency exits. There are also some industrial/commercial buildings that contain combustible contents (e.g. plastics industry). The multi-use occupancies in the core area of Cookstown in addition to their large coverage area represent a potentially significant fire loss risk and life safety risk due to the presence of residential occupancies above many of the commercial occupancies.

The demographic analysis of Innisfil indicates that by age category the Town is very representative of the provincial statistics. Seniors as a component of the population are also reflective of the provincial statistics and as such should be considered as a vulnerable component of the population. There are a minimum number of buildings identified where the most vulnerable demographic of the community reside. These buildings should be considered as high risk with regard to developing a pro-active fire prevention and protection program. Public Education programs should also be developed and delivered to target this demographic.

English is the predominate language within the community representing 90% of the population. This indicates that there should be a very minimal language barrier in the delivery of fire prevention and public education programs. In general income levels and the percentage of home ownership are higher than that of the provincial averages. These factors also relate to a lower percentage of rental housing compared to the provincial averages.

Geographic Information Systems (GIS) modeling of the actual emergency calls that occurred during the period 2009 to 2011 are reflected in the Existing Conditions Risk Profile Model. Using this risk model, calculations were carried out to estimate the number of historic fire calls that occurred within each risk zone category and the response time associated. The calculations show that for moderate risk calls, 41% are responded to in six minutes or less of response time (turnout plus travel time) and 78% are responded to in 10 minutes or less of response time (turnout plus travel time). The calculations show that for low risk calls, 25% are responded to in six minutes or less of response time and 65% are responded to in 10 minutes or less of response time. The model also indicates that 67% of calls in high risk zones are responded to in six minutes or less and 100% of calls in high risk zones are responded to in 10 minutes or less. This indicates that the majority of the calls, and specifically high risk calls, are within the 10 minute response time areas.

The GIS model was also used to approximate existing and future geographic coverage of the existing risk zone areas. Under existing conditions, 54% of high risk geography, 26% of the moderate risk geography and 18% of the low risk geography is covered within four minutes of predicted travel time. This scenario also results in 79% of the high risk zones, 67% of the moderate risk zones and 65% of the low risk zones being covered within the eight minute predicted travel time. The detailed methodology and results (including figures) from the GIS modeling of the Risk Profile are contained within ***Appendix A***.

The Community Fire Risk Assessment will form the basis for strategically planning the fire protection plans, optimizing the three lines of defence and developing department procedures, programs and services. It should be reviewed and revised on an annual basis in order to maintain an up-to-date assessment of community risk and community needs for fire protection and prevention. This could be done as a component of the process to develop a Simplified Risk Assessment for the IFRS, which is required by the OFM.

4.0 ADMINISTRATION

The Administration Division, led by the Fire Chief, oversees and monitors the resources and operations of the suppression, prevention and public education, and firefighter training functions of the department. The Administration Division is responsible for the preparation and management of budgets in addition to personnel management, resource management and records management for the overall fire and rescue service.

4.1 Mission Statement

The OFM identifies the importance of a fire department mission statement within PFSG 03-02-13 "*Master Planning Process for Fire Protection*". A mission statement should identify the goals and objectives of the department, identify the primary stakeholders and acknowledge the types of services and commitments of the department in order to achieve success.

The Innisfil Fire and Rescue Service currently has the following mission statement:

> *"The Innisfil Fire and Rescue Service mission is to serve the citizens of the Town of Innisfil, protecting life and property from fire, hazards, and other emergencies through accredited emergency response training, aggressive public education and fire code enforcement."*

The Innisfil Fire and Rescue Service mission statement is relevant and up to date. It relates to the comprehensive fire safety effectiveness model's three lines of defence, as it covers emergency response, life safety, prevention and education. It also specifies that the service is provided for the community, which is relevant for the FPPA 'needs and circumstances' clause.

4.2 Primary Goals

The goal of the fire and rescue service is to provide fire protection services through a range of programs designed to protect the lives and property of the inhabitants from adverse effects of fires, sudden medical emergencies or exposure to dangerous conditions created by man or nature; first to the municipality; second, to those municipalities requiring assistance through authorized mutual fire aid plan and program activities; and third, to those municipalities which are provided fire protection by the fire department via authorized agreement.

The Fire Master Plan assessed the fire services with consideration of the department's primary goal and provides recommendations to assist Council and Innisfil Fire and Rescue Service (IFRS) to continue to meet this goal under existing and future conditions.

4.3 Department Services

As per the establishing and regulating by-law, the fire department is organized into the following six major functions to provide service to the Town of Innisfil:

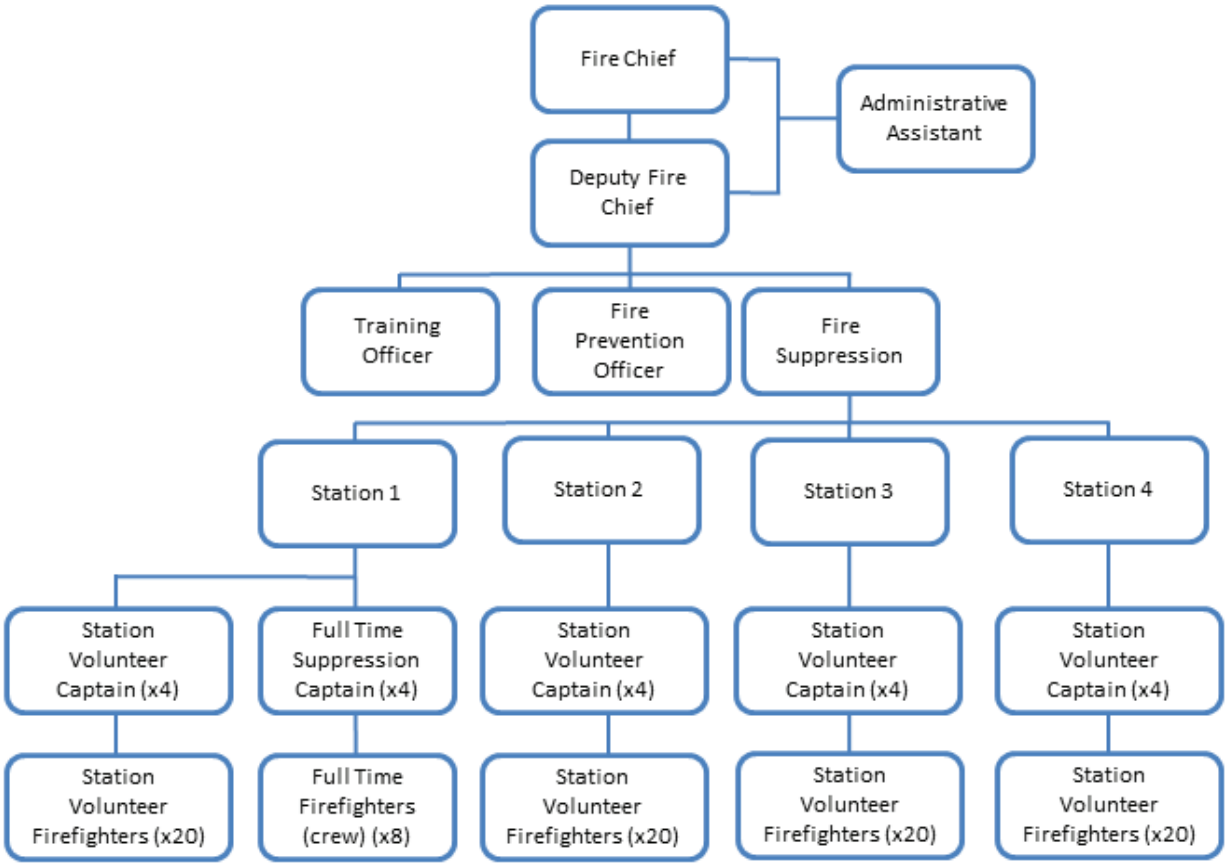
- Administration (e.g. maintaining adequate resources to effectively provide support to all departmental activities);
- Apparatus, equipment and communications (e.g. ensuring all apparatus and equipment is inspected regularly and maintained);
- Fire suppression (e.g. structural, vehicle, and wild land fire suppression services,);
- Fire prevention and public education (e.g. fire safety inspections, by-law enforcement, public education, and fire investigation);

- Rescue (e.g. emergency patient care, hazardous material incident response, and special rescue services); and
- Training (e.g., ensuring all staff acquire and maintain the necessary knowledge, skills and abilities to perform the job function).

4.4 Department Organization

The reporting structure associated with the current divisions of service is illustrated in **Figure 1**.

Figure 1: Department Organizational Chart



The IFSR organizational model and reporting structure is reviewed and updated regularly by the fire and rescue service management team. Innisfil Fire and Rescue Services currently employ 17 full time staff and 96 part time staff. These staff members are assigned various positions and divisions, as listed in ***Table 1.***

Table 1: Innisfil Fire and Rescue Service Staffing

Role / Division	#Full-Time Staff	#Volunteer Staff
Fire Chief	1	
Deputy Fire Chief	1	
Administration Coordinator	1	
Suppression / Operations: • Captains • Firefighters	 4 8	 16 80
Platoon Chief	0	
Training	1	
Fire Prevention Officer	1	
Public Education	0	
Fleet / Maintenance	0	
Communications / Dispatch	Contracted Services (Barrie Fire Department)	
Total Staffing:	**17**	**96**

4.5 Department Management Team

The present Fire Chief commenced his role on June 27, 2011. The Deputy Fire Chief at the time of the Fire Master Plan study started with the Town on January 3, 2012. Since joining the management team the Fire Chief and Deputy Chief have developed and implemented many new initiatives to continuously improve the fire and rescue service. They have faced the challenge of overseeing and managing the department with dedication and together bring to the IFRS a complimentary repertoire of experience and skills.

4.5.1 Fire Chief

As the head of the fire department, the Fire Chief is responsible for the proper administration and operation of the IFSR and for discipline of its members. The following is a summary of some of the areas of responsibility and duties assigned to the Town's Fire Chief within the establishing by-law:

- Preparation and periodic review of general orders and service policies, procedures and regulations for the care and protection of the Service;
- Executing proper measures for the prevention, control and extinguishment of fires and rescues and for the protection of life and property, including exercising the powers imposed by the FPPA;
- Enforcing the by-law to establish, maintain and operate a Fire and Rescue Service in the Town of Innisfil;

- Report all fires to the OFM as required by the FPPA;
- Submit annual budget estimates for the service to Council for its review and approval;
- Ensure that staff are receiving the proper training required to perform their duties;
- Appointment of a sufficient number of volunteer firefighters necessary to ensure the provision of fire protection service to the level established by Council from time to time; and
- Ensure investigations, when deemed necessary, are performed following fires where a dollar loss has been incurred or are suspicious in nature.

  The by-law identifies the responsibilities of the Fire Chief as they relate to the Administration of the Department as follows:

  - Prepare the Service Area budget and exercise control of said budget;
  - Initiate requisitions for materials and services and certify all accounts of that Service Area;
  - Maintain personnel records;
  - Arrange for the provisions of new stations and related facilities;
  - Carry-out the general administrative duties of the Service Area and arrange for the provision of medical services;
  - Conduct investigations of a fire in order to determine cause, origin, and where appropriate, to request the Office of the Fire Marshal to conduct an investigation;
  - Provide liaison with the Simcoe County Fire Coordinator;
  - Assist the Simcoe County Fire Coordinator in the preparation of an emergency Fire Service Annex and Operating procedures for the County Mutual Fire Aid Association; and
- Prepare and conduct technical examinations of full-time and volunteer firefighters.

4.5.2 Deputy Fire Chief

The Fire Department Establishing and Regulating By-law currently states that the Deputy Fire Chief shall report to the Fire Chief on the activities of the Services Areas for which responsibility has been delegated and carry out the orders of the Fire Chief. The by-law also identifies that in the absence of the Fire Chief the Deputy Fire Chief has all the powers and shall perform all the duties of the Fire Chief.

Although the Deputy Chief assists the Fire Chief to oversee the entire department, he is directly assigned to oversee the operations of the IFRS, including suppression, training and fleet.

4.5.3 Administrative Support

The key role of the administration coordinator provides the Fire Chief and Deputy Chief with administrative support, as required and directed. This includes such duties as data entry, standard incident reporting (OFM), records management, statistical compilation of data for reporting, and payroll data collection and compilation.

One of the challenges encountered during the fire master planning process was availability of historic data and statistics. Typically, five years of historic data are provided and assessed during the review of the department, however, a full five years were not available for all areas considered within the scope of the report. The current management team has implemented new records management processes and new administration practices which will ensure the collection, tracking and maintenance of records and statistics within IFRS. Sufficient administrative support, trained and competent in accurate records management processes will be essential for the success of the initiative to improve this area of the department.

Currently, the Fire Chief and Deputy Chief are conducting administrative duties, such as correspondence preparation and report preparation that could be assigned to or supported by administrative staff. This would allow the management team to focus on their areas of specialization and key responsibilities. The department is still in a transition to inputting all records into Firehouse and this continues to require high demand for administrative time and effort. Not all divisions are using the software and there are opportunities to improve and enhance the use and effectiveness of the records management program. This also requires inputting historic paper-based records into the system, where available. The current administrative coordinator is at capacity with records management, data entry, incident reporting and payroll.

Administrative support is required to develop and prepare written reports, policies, memos and other documents issued by the Administration Division as well as the other divisions of the IFRS. The administrative support is also required to assist with personnel records management, provide budget preparation support and provide assistance with regards to confidential matters. As the department continues to grow in size (e.g. additional stations and increasing firefighter complement) the need for additional administrative support is expected to increase. The current and future workload should be monitored to determine when additional resources should be assigned to the department.

4.6 Administrative Workspace

The existing administrative space is located at Station 1 – Headquarters. Some space limitations currently existing and there is a need for additional storage space. Office supplies and the administration printer / photocopier are stored in a hallway by the offices. Storage areas are at capacity with department supplies, station supplies, training materials and public education / fire prevention materials.

All office space is presently occupied, with some areas being shared spaced. If additional full-time staff is added to the Administration, Fire Prevention or Training Divisions, additional office space will be required. It is recommended that as new stations are designed and constructed, either to replace existing fire stations or to add a station to a newly developed area that considerations be made to incorporate the IFRS Headquarters at the new facility. This will allow for appropriate space and facilities to be planned and provided to adequately meet the needs of the department.

4.7 Annual Report

Ongoing evaluation and monitoring of the level of fire protection services provided by the fire and rescue service, in consideration of the evolution of risk within the community, are the foundation for sustaining an effective and appropriate level of service to meet the community needs. Annual reports are a valuable communications tool to inform Council and the community about the status, performance and achievements of the Innisfil Fire and Rescue Service.

Preparation of an annual report provides a high degree of accountability, monitoring of department performance and transparency within the fire services. The Fire Chief prepares an annual report summarizing the activities, operations and successes completed over the course of the year. These reports are organized by division, providing details and statistics on staff, programs, changes and accomplishments during the year. Where possible, the administrative coordinator should be assigned to assist with duties such as annual reporting.

4.8 By-laws & Agreements

The *Municipal Act*, R.S.O. 1990 requires a municipality to enact a number of by-laws to operate a municipality and specifically their fire service. In addition to meeting this legislative responsibility by-laws provide the community with important information with regard to 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.

Our review of the existing by-laws approved by the Town of Innisfil indicates that all required by-laws are in place.

Ensuring these documents are regularly reviewed and updated to reflect any changes in service level or changes in authority are important functions. The current Fire and Rescue Service Establishing and Regulating By-law (By-law Number 028-02) was passed in 2002.

The Establishing and Regulating By-law (By-law 028-02) is the by-law that establishes and regulates the Fire Department. It establishes the Fire Chief as the appointed head of the fire and rescue service and defines the Deputy Fire Chief as the person appointed in the absence of the Fire Chief. The by-law also describes the Fire Chiefs responsibilities and the roles and responsibilities associated with each division of the IFRS.

The Fire Chief is responsible for the administration and enforcement of the Establishing and Regulating By-law, as well as other Innisfil agreements and by-laws which relate to fire services. These include:

- Social Services Agreement – to establish a framework of roles and responsibilities with respect to the provision of social services in the event of an emergency;
- Fees for Service By-law;
- Burning By-law;
- Fireworks By-law;
- Volunteer By-law – terms and conditions of the Volunteer Fire Fighter compensation and benefits;
- Memorandum of Understanding with Simcoe County to establish and operate CBRNE and HAZMAT Incident Response Team; and
- Emergency Management Plan By-law.

The Fire Chief currently reviews all by-laws relating to the fire department on an as needed basis. Subject to Council's approval of the recommendations contained within this FMP we recommend that the current Fire Department Establishing and Regulating By-Law be updated to reflect the changes recommended.

4.8.1 Mutual Aid Agreements

Mutual aid agreements are predetermined plans that allow a participating fire service to request assistance from a neighbouring fire service. Public Fire Safety Guideline (PFSG 04-05-12) provided by the OFM identifies the information required to develop and approve these agreements.

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

1. When a fire department is on-scene at an emergency, has received information that immediate assistance is required, it may ask for mutual aid assistance from a neighbouring fire department.
2. Where distance and/or conditions are such that a neighbouring fire department could provide a more timely response, fire departments may immediately request a simultaneous response from a participating fire department.

4.8.2 Automatic Aid Agreements (Fire Protection Agreements)

In contrast to mutual aid agreements, automatic aid agreements are programs designed to provide and/or receive assistance from the closest available resource, irrespective of municipal boundaries, on a day-to-day basis.

The obvious advantage of implementing an automatic aid program is the person experiencing the emergency receives fire services from the closest available provider by supplying seamless service through the elimination of artificial service boundaries. Some of the additional benefits that an automatic aid agreement provides include:

- 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 assistance;
- the reduction of life, property and environmental losses; and
- the improvement of public and fire-fighter safety.

Innisfil Fire and Rescue Service provides or receives automatic aid through the following agreement:

- Automatic Aid Agreement between the Town of Innisfil and the Township of Essa;
- Automatic Aid Agreement between the Town of Innisfil and the Town of New Tecumseth; and
- Automatic Aid Agreement between the Town of Innisfil and the Town of Bradford West Gwillimbury.

Innisfil is currently investigating and pursuing opportunities for an automatic aid agreement with the City of Barrie to provide response services to the Highway 400 southbound lane from the northern limit of the Town to Innisfil Beach Road.

4.8.3 Tiered Response Agreement

Within the Province of Ontario emergency response to incidents involving medical aid by the local fire department are commonly included within a regional Tiered Response Agreement. These agreements are valuable in defining the levels of service that a fire department will provide in the context of the regionally based provision of ambulance services. The Town of Innisfil participates in a Tiered Response Agreement with the County of Simcoe.

Under the agreement the Town of Innisfil currently responds to medical calls in the County of Simcoe that are a Level A Tiered Response. ***Table 2*** outlines when the IFRS are to be activated, according to the terms of the Level A agreement.

Table 2: Activation Criteria

Complaint	Fire*
Non-responsive/Not awake	A&B
Choking – Not breathing	A&B
Profuse bleeding	A&B
Cardiac Chest Pain – Paramedic > 15 min ETA	A&B
Cardiac Chest Pain	A
Acute Shortness of Breath	A
Convulsion/Seizure > 30 yr. with no or unknown history	A
Structure fire with reports of smoke or flame	X
MVC with unknown or suspected injuries	X
MVC – no injuries – with spill or leak from vehicle (gas, oil or other Hazard) -suspected need for extrication -suspected difficult access (off road)	X
MVC – on 400 series, Provincial Highway	X
Any other medical	
Any other fire	X
Multi Casualty Incident/Disaster	X
Explosion	X
Carbon monoxide calls with symptomatic patients	X
CBRNE	X
Allied Agency request, post arrival at scene	X

**The character "A" indicates the activation of those agencies listed as Level A medical aid responders in the agreement. The character "B" indicates Level B medical aid responders in the agreement. The character "X" indicates notification of all appropriate services outside of medical aid response.*

Our review of the current tiered response agreement indicates that medical calls reflect a large percentage of the workload of the department. From 2007 to 2011, 46% of the calls responded to by IFRS were medical calls, a total of 3,527 medical calls over those five years. The medical call volume responded to by the department has been over 750 calls per year from 2008 to 2011.From 2009 to 2011, approximately 21% of all medical calls were "medical aid not required on arrival" calls. This causes frustration within a volunteer model, when time and effort go into a response, but no service or value is provided on-scene. Currently the County of Simcoe delivers EMS. Through the provision of this service, the County receives a subsidy from the provincial government for the cost of providing the service. However, IFRS does not receive funds for the medical service it provides. As the community continues to grow, so too will the number of medical calls, which will increase the workload of the fire stations. As the Town continues to grow and explore options for adding new stations, IFRS should consult with the County to discuss the potential of adding more EMS resources to help respond to the increasing number of calls.

It is our understanding that the County and local fire services are currently reviewing the tiered response medical aid program, process, participants and responses to assess the overall level of service. It is recommended that Innisfil review the medical agreement with consideration of revising it to a 'Level B.' It is expected that this would result in a reduction in medical calls and subsequently reduce some of the pressures on the volunteer component of the IFRS. Innisfil's peer fire services within the County have enacted a Level B medical agreement to reduce call volume and successfully reduced the overall workload on the volunteer firefighters.

4.8.4 Dispatch Services Agreement

As of January 1st 2013, dispatching services are now being provided by the City of Barrie. This will align the overall response for the IFRS with existing NFPA performance standards. Consideration should be given to assuring that a performance standard (e.g. NFPA 1221) is referenced in the agreement in order to assess and maintain the desired level of service from the dispatch provider.

4.9 Departmental Policies and Standard Operating Guidelines

Best practices within the Ontario fire service reflect the use of department policies as the appropriate tool to communicate specific direction to all staff. In comparison to standard operating guidelines, which provide a framework to guide decision making, department policies reflect more stringent and defined practices that minimizes variance from the directive given. An example of a fire department policy would be a "*Respect in the Workplace Policy*" where specific direction is given to all members of the department that reflects the policy of the corporation in consideration of relevant legislation governing the topic.

Standard operating guidelines (SOGs) are used within the fire service to establish a written statement to guide the performance or behaviour of departmental staff, whether functioning alone or in groups. Standard operating procedures are intended 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; and
- permit flexibility in decision making.

Best practices and the OFM indicate that creating and empowering a committee of fire and rescue service staff to research, develop, and draft standard operating guidelines can be a successful model for administering these core documents. Activities that impact on firefighter safety, the most common emergency operations, or high risk operations should be the top priority for a fire and emergency service to have in place.

Standard operating guidelines are required to be finalized and approved by the Fire Chief. Procedures should then be in place within the fire and rescue service to ensure that these procedures are distributed to all staff affected, understood by all staff and followed as directed. Applicable procedures to record this process of development, approval and distribution must be in place to ensure due diligence on behalf of the fire and emergency service and the municipality, as the employer.

Health and safety is an essential consideration for fire and emergency services. In addition to the relevant sections of Ontario's *Occupational Health and Safety Act* (OHSA) the fire service is also required to comply with the OHSA Section 21 Guidance Notes.

The IFRS is working to develop a comprehensive set of department policies and procedures and standard operating guidelines to clearly identify the expectations and processes for staff to follow. Currently there are no SOGs regarding fire prevention and public education operations performed by IFRS. It is recommended that the department use the available resources of the on-duty crews to assist with the development of draft operating guidelines. A committee of IFRS staff could be used to review, revise and finalize the documents. Priority documents should be developed in the first year, with a target of developing a comprehensive set of SOGs within two to three years.

4.10 Departmental Records Management

IFRS currently uses Firehouse software as their digital records management platform. It is a relatively recent implementation as it was included in the recommendations of the 2004 Fire Master Plan. Currently not all divisions are using the software and there are opportunities throughout IFRS to improve and enhance the use and effectiveness of the program. Having sufficient administrative support will be necessary for the implementation of this initiative.

At the time of the study initiation, no electronic records management system was in place for the fire prevention and public education division. All records were handwritten. A process was underway to receive mobile units (e.g. iPads or laptops) for fire prevention inspections. These could be linked into Firehouse, providing direct input of inspection reports and records into digital format. It is recommended that this initiative be followed through and accomplished.

When SOG's are created or edited they must be reviewed by all staff, a signature is required and uploaded to Firehouse upon completion.

In 2012, under the direction of the present management team, IFRS started using Firehouse to maintain all of their training records. Prior to 2012, there were very limited recording/tracking of training activities.

Currently all training is being recorded in Firehouse. Personnel must sign attendance sheets in order to verify training participation and these sheets are then uploaded into Firehouse for records management purposes. Training records were poorly maintained and only in hard-copy formats prior to this initiative. In addition to the revised process of managing the training records, we recommend that a practice be established to ensure each individual personally signs-off on his/her completed training sessions. This practice should also require the trainer to sign the record. This process is considered a best practice with regards due diligence in providing training evidence to authorities, such as the Ministry of Labour Ontario.

4.11 Departmental Communications

Communications within the Town's fire and rescue service consists of dispatch procedures and equipment for rescue operations as well as internal communication between the members of the department. The Fire Chief or designate is currently in charge of the following duties:

- Receive dispatch reports from the dispatch office and dispatch apparatus;
- Prepare specifications for new communications system and for additions to existing communication system;
- Maintain the communications system;
- Prepare the annual report and budget for Communications to be submitted; and

- Such other duties as may be assigned.

Dispatch communications and procedures are discussed in the suppression section of the report (**Section 6.0**).

4.12 Internal Department Communications

Internal communications can be a challenge in composite fire departments, as well as those with fire stations that are geographically separated or contained within former communities amalgamated into the larger municipality. Internal communications appear to be working well at the station level, but would benefit from more interaction and communication at the overall departmental level. Department staff have a desire to be informed, be involved, and ultimately help towards achieving the goals and objectives of the department. In our experience there are various strategies that could be considered to enhance communications within the department. This could include use of technology, such as online bulletin boards, station-based electronic message boards or regular email bulletins to all staff. Opportunities for multi-station or department-wide training sessions or information sessions should be encouraged. Opportunities for the management team, full-time staff and volunteer staff to interact should be fostered and supported.

4.13 Budgets, Development Charges and Revenues

4.13.1 Capital and Operating Budgets

The preparation and ongoing monitoring of capital and operating budgets is a significant activity and responsibility within the fire and rescue service. The Fire Chief is directly responsible to Council for its capital ($140,000 in 2012) and operating ($3.0 million in 2012) budgets. The recommended 2013 budgets include $155,300 in capital and $3.09 million assigned to operating. The Deputy Fire Chief and Fire Prevention Officer provide input to the Fire Chief for the areas that align with the respective divisions for which they are accountable. The Training Officer position will assist the Fire Chief and Deputy with the preparation of budgeting and tracking for costs associated with department training.

The capital budgets for the IFRS are forecast for the coming five year horizon. This allows for strategic planning of both new and replacement capital expenses.

4.13.2 Development Charges

Development Charges in the Town of Innisfil are regulated by three by-laws:

- By-Law # 020-09 – By-Law to impose development charges for the recovery of water, sewer and road growth related capital costs;
- By-Law # 021-09 – By-Law to amend the development charge By-law #043-04;
- By-law # 086-09 – By-Law to impose development charges for Town-Wide General Services, and to and By-law # 086-09;
- By-law # 089-09 – By-Law to impose development charges for the recovery of water and road infrastructure in the Innisfil Heights area.

The Town of Innisfil is initiating a review of its Development Charges and related by-laws in 2013. Currently, the development charges associated with the fire and rescue service are as shown in ***Table 3***.

Table 3: Development Charges Schedule of Rates

CORPORATION OF THE TOWN OF INNISFIL DEVELOPMENT CHARGES SCHEDULE OF RATES

	Residential Charges by Unit Type Per Dwelling Unit				Industrial, Business Park and Institutional Charge Per Square Meter of Total Floor	Commercial or Other Non-Residential Charge Per Square Meter of Total Floor
	Singles and Semi-Detached	Rows and Other Multiples	Apartments			
			Two Bedroom and Larger	Bachelor and One Bedroom		
SCHEDULE "C" to By-law #086-09						
General Government	$ 597	$ 545	$ 364	$ 278	$ 3.52	$ 3.52
Library Services	824	753	502	383	-	-
Fire & Rescue Services	1,019	930	621	473	6.00	6.00
Police Services	351	320	214	162	2.08	2.08
Parks & Recreation Services (Indoor)	3,507	3,203	2,136	1,630	-	-
Parks & Recreation Services (Outdoor)	2,125	1,941	1,294	989	-	-
Public Works	521	476	316	242	3.07	3.07
Municipal Fleet	154	140	93	71	0.90	0.90
Total Town-Wide General Services	$ 9,098	$ 8,308	$ 5,540	$ 4,228	$ 15.57	$ 15.57
SCHEDULE "A" to By-law #020-09						
Roads and Related	$ 13,141	$ 12,003	$ 8,003	$ 6,108	$ 70.65	$ 70.65
Total Town-Wide Services	$ 22,239	$ 20,311	$ 13,543	$ 10,336	$ 86.22	$ 86.22

Eligible categories for inclusion in the collection of development charges are fire stations and firefighting apparatus (including rescue vehicles, pumpers, and aerial devices). Small equipment and protective gear are also eligible. In recent years the definition of small equipment and gear has been cause for much discussion within the industry. This discussion has been led by Fire Chiefs identifying the high initial capital costs and direct relation of this small equipment and gear to the overall operational functional capability of a fire station and the fire department.

More recent development charge reviews have included consideration of the equipment assigned to the apparatus and station as being within the definition of equipment. Given the escalating costs of equipment such as, Self-Contained Breathing Apparatus (SCBA), hose, auto extrication equipment, and equipment such as portable pumps this is an important consideration. Including firefighter protective clothing (bunker gear) has also been identified as a consideration. It is also relevant to consider equipment that is "fixed" to the fire station such as SCBA air filling and air compressor systems that can cost in excess of $100,000.

The results of the current development charges study should be utilized to update the Town's development charges to accurately reflect servicing needs and recover costs related to growth in Innisfil. It is expected that Station 5 at Big Bay Point and the related apparatus and suppression equipment will be eligible for development charges funding.

4.13.3 Fees for Service

The Town has an existing by-law (By-law #010-11 'Schedule D') which identifies fees for various Fire and Rescue Services. IFRS should review the services provided by all divisions and give consideration to completing a full review of all current fees charged. It is recommended that all fees for service be reviewed and revised on an on-going basis to ensure that they accurately represent the fiscal realities of the services.

4.14 Community Emergency Management

Under the Ontario *Emergency Management and Civil Protection Act,* the Solicitor General has authority to make regulations setting standards for the development, implementation and maintenance of emergency management programs required by communities. It is the responsibility of every municipality, minister of the Crown and designated agency, board, commission and other branches of government to ensure that their respective emergency management plans conform to the standards set within the Act. The Act also requires every municipality to adopt the emergency management program by by-law.

Emergency Management Ontario (EMO) has developed a core emergency program, with elements focused on supporting emergency preparedness and response activities. The program requires designating an Emergency Management Coordinator (EMC), having a written emergency response plan and forming a program committee. Part II of the *Ontario Regulation 380/04* lays out the Municipal Standards for emergency management. There are six main standards, relating to:

- Emergency Management Program Coordinator;
- Emergency Management Program Committee;
- Municipal Emergency Control Group;
- Emergency Operations Centre;
- Emergency Information Officer; and
- Emergency Response Plan.

The emergency plan is designed in a generic fashion which allows it to respond to situations that are unexpected and require a coordinated response and recovery. The plan is based on a hazard identification and risk assessment (HIRA), which is a required component under the *Emergency Management and Civil Protection Act*.

The plan also includes a primary Emergency Control Group and Emergency Support Group, which consists of all of the significant stakeholders responsible for managing the community and adjacent areas. This group would be assembled, if the emergency plan is activated, to approve the decisions required to control situations that arise during an emergency.

Within the Town of Innisfil, the Fire Chief has been assigned the role of Community Emergency Management Coordinator (CEMC). Working with the Community Emergency Management Coordinator, the Emergency Management Committee oversees the Emergency Response Plan. In conjunction with Emergency Management Ontario, the Emergency Response Plan meets the provincial standards for prevention, preparation, response and recovery from a major emergency in the Town.

The emergency response is directed and controlled by the Community Control Group (CCG), which is a group of officials who are responsible for coordinating the provision of essential services necessary to minimize the effects of an emergency on the community. The CCG is composed of the following individuals, each with their own set or responsibilities:

- Mayor;
- Chief Administrative Officer;
- Community Emergency Management Coordinator;
- Director of Legal Services/Clerk;

- Police Chief;
- Fire Chief;
- EMS (ambulance);
- Medical Officer of Health; and
- Communications Officer.

4.15 Administration Division Summary of Recommendations

As a result of our review and assessment of the Administration Division, we recommend that:

- *That as new stations are designed and constructed, either to replace existing fire stations or to add a station to a newly developed area that considerations be made to incorporate the IFRS Headquarters at the new facility to address existing space and storage limitations.*
- *That, subject to Council's approval of the recommendations contained within this FMP the current Fire Department Establishing and Regulating By-Law be updated to reflect the changes recommended.*
- *That Innisfil consider revising the medical agreement to a 'Level A' or 'Level B' to reduce medical call volume and subsequently reduce some of the pressures on the volunteer component of the IFRS; and that the IFRS consult with the County of Simcoe regarding the provision of additional EMS services as the community continues to grow.*
- *That the department use the available resources of the on-duty crews to assist with the development of draft operating guidelines. A committee of IFRS staff could be used to review, revise and finalize the documents. Priority documents should be developed in the first year, with a target of developing a comprehensive set of SOGs within two to three years.*
- *That consideration be given to assuring that a performance standard (e.g. NFPA 1221) is referenced in the agreement in order to assess and maintain the desired level of service from the dispatch provider.*
- *That Firehouse continues to be utilized as the records management method for all divisions of the IFRS and that any recent initiatives to improve records management processes (e.g. fire prevention and training records) are followed-through.*

5.0 FIRE PREVENTION & PUBLIC EDUCATION

The Town of Innisfil, through the fire and rescue service, carries out fire prevention enforcement and public fire safety education programs, within the guidelines of the *Fire Protection and Prevention Act,* 1997 (FPPA). Under the FPPA, *"every municipality shall, 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."*

The Office of the Fire Marshal, Ontario (OFM) describes the minimum requirement for a community fire safety program as including:

- *a smoke alarm program with home escape planning;*
- *the distribution of fire safety education material to residents/occupants;*
- *inspections upon complaint or when requested to assist with code compliance (including any necessary code enforcement); and*
- *a simplified risk assessment.*

5.1 Comprehensive Fire Safety Effectiveness Model

The Fire Prevention and Public Education Division is responsible for coordinating the initiatives of the Innisfil Fire and Rescue Service to optimize the impact of applying the first two lines of defence identified within the Ontario Fire Protection Model including:

- ✓ ***Public Education and Prevention***
- ✓ ***Fire Safety Standards and Enforcement***
- ✓ ***Emergency Response***

Best practices of other municipalities within the province have shown that optimizing the efforts dedicated to these lines of defence can have a positive impact on reducing emergency call volume, and increasing the overall level of fire protection within the community.

Utilizing these lines of defence across the community and prioritizing the programs to address areas of the community identified by the Community Risk Profile should be considered a strategic priority of this plan. For example, high priority should be given to optimizing the first two lines of defence in areas of the community where vulnerable occupants reside and where emergency response times may be longer as a result of extended travel times by fire suppression staff (e.g. rural residential).

5.2 Staffing

Prior to 2005, the duties of fire prevention and education were assigned to a fire suppression Captain. The Captain conducted inspections and public education while on duty. These inspections were limited (due to limited availability of the inspector/Captain) and were completed based on requests or complaints only. Public Education was limited to occasional school visits and hall tours at that time.

In 2005, the position of a Fire Prevention Officer (FPO) was created. The Fire Prevention Officer currently reports directly to the Fire Chief and serves as the Alternate Community Emergency Management Coordinator. As the staff resources for this division are limited, it is essential that the priority of the Fire Prevention Officer be directed at the first two lines of defence. The current workload for the FPO is quite expansive and burdening for one person. There are a number of duties that he is assigned to complete. With the current staffing the division is at or above workload capacity.

This divisional review identifies the broad range of services provided by this division and highlights a number of areas noted for consideration in order to optimize programs directed at the first two lines of defence. In order to broaden the public education programs being developed and delivered to the community, additional resources will be required. In order to target the vulnerable demographics and respond to the community risks identified within the risk profile we recommend adding resources to the division. Beyond improving and enhancing the depth of public education delivered by the IFRS, a new staff member could assist the FPO with fire prevention inspections, enforcement and investigations in order to divide the current workload. This will be essential to the optimization of the first two lines of defence. As an interim step, consideration could be given to duties currently assigned to the FPO that could be reassigned to other Town or department staff, as applicable.

5.3 Key Functions

The establishing by-law lists the following duties to be assigned to the Fire Prevention Officer by the Fire Chief:

- Conduct fire prevention inspections;
- Enforce the Ontario Fire Code and other applicable Provincial codes and any authorized Municipal Fire Prevention By-Laws;
- Examine building plans;
- Provide personnel for fire prevention lectures;
- Assist with fire investigations and maintain photographs of facilities as may be required;
- Maintain fire loss records;
- Receive, process and prepare follow-up reports of fire prevention inspections conducted;
- Prepare and submit to the Fire Chief the annual report and budget for the Fire Prevention Division; and,
- Perform such other duties as may be assigned.

The primary function of the Fire Prevention Officer is conducting fire prevention inspections. These inspections include complaints, requests, licensing, building occupancy and target inspections. Since the implementation of the FPO position in 2005, the initiative has been to move from a reactive inspection program (requests or complaint only) to a proactive inspection program to address priority inspections on an on-going basis. This has required a concentrated effort by the FPO on developing and implementing this proactive inspection program. The first step in the initiative was to inspect all Town of Innisfil buildings and ensure compliance in order to set the example for the remainder of the community building stock.

The FPO is also responsible for public education programs including the smoke alarm program, distribution of fire safety messages; preparing public displays; conducting fire hall tours; and giving lectures and presentations to the public. Other public education programs and initiatives include fire extinguisher training, home inspections, fire safety trailer program TAPP-C (The Arson Prevention Program for Children), and providing the Older Wiser Program (for seniors). The FPO also reviews and approves fire safety plans as required.

During the time period around Fire Prevention Week the FPO's priority is the fire safety trailer education program.

Table 4 below provides estimates of the FPO's time commitments allotted to fire prevention and public education activities that the IFRS currently provides. The majority of the FPO's time commitments relate to prevention inspections. This is consistent with what would be expected from a dedicated fire prevention resource.

Table 4: Fire Prevention and Public Education Activities

Activity / Program Name	Time Commitment	% Time Commitment
Public education	5 hours/week	12%
Fire inspections	27 hours/week	67%
Training	2 hours/week	5%
Plans examination	6 hours/week	15%
Fire investigation	As required	1% or less

5.4 Fire Prevention and Public Education Activities

The current fire prevention and public education efforts of the IFRS are focused on the first two lines of defence of the Comprehensive Fire Safety Effectiveness Model. These include the delivery of public education and fire prevention programming and activities related to fire safety standards and enforcement. An overview of these programs and activities are included below.

5.4.1 Public Education Programs

The Innisfil Fire and Rescue Service acknowledges the benefits and importance of providing fire and life safety public education programming to Town's residents.

Currently, it is the responsibility of the FPO to prepare and evaluate the public education programs delivered by IFRS. On-duty suppression staff supports the FPO by delivering the smoke alarm program and by delivering programs and presentations to schools, community groups and residents as required. The on-duty crews are also trained to operate the Fire Safety Trailer and deliver the related programs.

The volunteer firefighter crews have also received some basic training in order to assist with public fire safety programs. A recent initiative included the use of volunteer firefighters to assist with the delivery of the home smoke alarm program. Volunteer crews were also recently involved with delivering some of the summer programs.

The following are examples of public fire safety programs delivered by the Innisfil Fire and Rescue Service. These programs are researched, developed and implemented to respond to the specific needs of targeted groups and demographics. Examples of these programs include:

- Fire Prevention Week
- Fire Safety Trailer
- Smoke Alarm Program
- Tapp-C
- Older Wiser Program
- Public Service Announcements
- Community Presentations
- Station Visits
- Fire Extinguisher Training

Best practices of other municipalities have proven that expanding and enhancing public education efforts is an effective strategy to increase the overall level of fire protection within a community and can result in a reduction of emergency call volume. Within a composite department utilizing volunteer firefighters managing and where possible reducing emergency call volume can have a positive impact on the sustainability of the volunteer model.

From a public education perspective priority should be given to implementing and expanding programs that address the vulnerable populations identified within the Community Risk Profile (e.g. seniors) as well as areas of the community where high risks are predicted or emergency response times are extended due to factors such as long travel times (e.g. rural or remote areas).

Fire Safety Trailer

The Town's Fire Safety Trailer is an excellent tool used for public education activities delivered to both children and adults. The trailer is divided into two main areas. The first section teaches fire safety in simulated living and kitchen areas of a home. The second section teaches what to do if you are awaken by smoke alarms in your home (home escape planning). The trailer is equipped with various props including theatre smoke. It is a mobile classroom that the division uses at various community events, festivals, BBQ's and schools. It can also be used at the stations during tours. The trailer also doubles as a mobile command /rehab center at some large-scale emergency scenes.

Timed to coincide with Fire Prevention Week, the Fire Safety Trailer is used to deliver public fire safety education to school children. The program reaches approximately 2,800 students each year over a three week period. The program is delivered to all students within the Town from junior kindergarten to grade 3. The mobile trailer unit is a very effective tool to teach fire safety in the home, including home escape planning to this target demographic.

The Town may consider opportunities for corporate sponsorship to support the funding for the fire safety trailer and the related programs.

Smoke Alarm Program

One of the legislated requirements of the FPPA is the delivery of a Smoke Alarm Program. It is an important element in the department's "first line of defence" as part of optimizing the fire protection services provided. The Town currently identifies 50 target residences to receive the home smoke alarm program delivered by each of the volunteer stations. The full-time crews are assigned to target 200 residences to receive the home smoke alarm program. Priority is targeted at seniors and mobile homes. It is recommended that the Town continue to utilize the on-duty crews and volunteer firefighters to optimize the delivery of the Smoke Alarm Program.

Innisfil Fire and Rescue Service is currently meeting the minimum requirements of the FPPA. In 2012, the volunteer and full-time crews were involved in the Smoke Alarm Program. A total of 433 homes were targeted. Of the 433 homes, 101 homes would not allow entry or were not home at the time of the visit. The remaining 332 homes were inspected and it was found that 269 homes were in compliance. The crews found 26 homes with non-functioning or missing batteries. These homes were given batteries and were in compliance after the initial visit. The remaining 37 homes were found to be non-compliant and were left with working "loaner" smoke alarms (to be returned when the home owner corrects the deficiencies that were found).

Utilizing the Community Risk Profile the IFRS should emphasize the Home Smoke Alarm Program as the "first line of defence" in areas of the community (such as rural residential areas) where extended emergency response times are present due to factors such as increased travel times. It is also recommended to prioritize delivery of the new program to areas of known risks such as older building stock or areas that have experienced historic fire loss.

5.4.2 Fire Prevention Inspections

The FPO's job description identifies that he is responsible for organizing a fire inspection program for all classes of buildings and occupancies within the municipality. Currently the fire prevention inspections work load is driven by the following:

- Requests or complaints;
- Real estate purposes;
- Municipal and provincial licensing requirements;
- Building occupancy and target inspections.

Inspections also include large open air burning, fire break lots for new sub-divisions, retail fireworks, occupancy inspections and acceptance testing of dry hydrants, fire alarms, and sprinkler systems. The Fire Chief and the FPO determine the target number of inspections each year. The target for 2013 is 180 inspections. There is no written or formal inspection cycle.

The FPO tracks the inspections on an annual basis and completes between 200 and 300 inspections per year. It is estimated that a total of 300 inspections were completed in 2012. The inspection records are currently kept at Station 1 in the FPO Office; however, the files are limited and records management for fire prevention inspections is a challenge.

The on-duty firefighter crews do not currently conduct regular fire prevention inspections, but are trained on how to use each building's fire protection equipment. This occurs just prior to occupancy of the building. Follow-up training occurs as required and has been very successful. Building owners and firefighters have found it very beneficial. On-duty crews will conduct inspections of large burn permits and home inspections, if requested.

It is recommended that formalized and specific performance measures for fire inspection cycles be developed based on the identified risks within the Community Risk Profile. Once developed, these performance measures should be presented to Council for consideration and approval. For example, seniors' residences and care facilities are currently inspected annually. This inspection cycle would be considered consistent with the findings of the Community Risk Profile. A sample of inspection cycle targets is provided in ***Table 5***. These can be used as a guide to assist the Fire Chief and Fire Prevention Officer in developing performance targets for the Town of Innisfil's formalized inspection cycles.

Table 5: Sample Fire Prevention Inspection Targets

Occupancy Classification (OBC)	Buildings	Recommended Inspection Performance Target
Group A – Assembly	Schools, Nursery/Day Care Facilities, Arenas, Curling/Golf Clubs, Recreation / Community Centres	Annually
Group B – Institutional	Hospital, Nursing homes, Homes for Special Care	Annually
Group C – Residential	Apartments regulated by Parts 9.3, 9.5 and 9.8 of the OFC Hotels/ Motels / Bed and Breakfasts Facilities, etc. Home Inspection Program	Annually Annually Upon Request
Group D - Business	Business and Personal Services Occupancies	Upon Request
Group E - Mercantile	Mercantile Occupancies	Upon Request
Group F - Industrial	Factories and Complexes	Upon Request

5.4.3 Fire Investigations

Investigations are listed under the responsibilities of the Fire Chief and assisting with fire investigations is assigned to the Fire Prevention Officer. This requires the FPO to attend emergencies, interview witnesses, photograph scenes and gather evidence for the purpose of determining the origin and cause of fires. Investigations of the cause of fire are a requirement within the FPPA. The FPO conducts these investigations and assists the OFM with their investigations as required. Currently, the FPO also responds to fire related calls while on duty and is limited by the Collective Agreement to the role of Safety Officer. Involving the FPO as part of the fire suppression resource deployment to fire scenes presents a potential conflict during the investigation process. Ideally, the investigation would be completed by personnel who were not part of the IFRS responding crew. Additional staff support, both within the Suppression Division and the Fire Prevention Division could alleviate the need for this dual role.

The workload associated with these services is dependent on the number of fires and required investigations each year. Ideally, with an increased focus on public education and fire prevention, the Town will experience a reduction in annual fires and therefore reduce the number of investigations required.

5.4.4 Fire Safety Plans

The FPO is responsible for reviewing fire safety plans required by the Ontario Fire Code. The FPO reviews site plan drawings for commercial, industrial, retail and multi-unit residential properties at both the site plan and construction stages. The FPO is Building Code Identification Number (BCIN) certified and works in conjunction with the Building Department on construction matters. The FPO conducts inspections with the Town's Building Department at occupancy and during acceptance testing of equipment. The Building Department is able to review the safety plans without the review of the FPO if he is on vacation or ill. As the Town continues to grow, the amount of time required to review all development plans will significantly increase. The FPO should look for opportunities to share this workload with Building Department staff to identify efficiencies. The FPO should focus the specialized skill of reviewing fire safety plans for unique situations that require extra attention. Adding staff capacity to the Fire Prevention Division would add redundancy to this review process. Currently no by-law requires the FPO to review the plans.

5.4.5 Fire Prevention Technologies

The fire and rescue service currently uses Firehouse software; however, the Fire Prevention Division has historically relied on paper-based records management processes. The mobile inspection portion of the software was used on a trial basis, but has not been carried forward. The Town currently lacks IT resources to properly apply the software as a mobile application. The Town is currently exploring the possibility of using an iPad to run the application. This would allow for remote use of the software and assist with managing inspection records.

The Town also utilizes a program called TPS. It is used by various departments to track and log work orders. It also allows the fire rescue service to see building details, permits and the status of by-law complaints.

The Innisfil Fire and Rescue Service website currently provides fire prevention and public fire safety information. This is an excellent venue for providing information to the broad community base and opportunities to enhance the information provided should be pursued.

5.5 Fire Prevention and Public Education Priorities

The current priorities of the fire prevention and public education programs delivered by the division are in line with the vulnerable populations of the community and the risk categories which pose the most likely fire loss potential. The first two target populations are children and seniors. This is consistent with the vulnerable populations and best practices in the industry. The division also targets all residential buildings and the populations who live and sleep within, knowing that this group typically represents the most likely occurrence of historic fire losses. The final priority of the division is industrial and commercial occupancies within the Town. The priorities of the fire and rescue services and the programs used to respond to all are listed in ***Table 6***.

Thorough tracking and monitoring of IFRS statistics over the coming years is expected to provide evidence of the effectiveness of the enhanced prevention and education programs. Tracking and reporting this information is essential to relay the importance of added public education resources as a first line of defence in order to reduce the workload on the third line of defence (suppression staff) to Council and the community at large.

Table 6: Fire Prevention and Public Education Priority Setting Worksheet

Priority	Status		Effectiveness, Goals/Objectives		
Fire Safety Priority (List in order of Priority)	**Current fire prevention / public education programmes that address the fire safety priority**		**Existing programmes adequately address the fire safety priority & ensure compliance with minimum FPPA requirements?**		
				Options for Improvement	
	Fire Prevention (Inspection) Activities	**Public Education Activities**	**Y/N**	**Fire Prevention Activities**	**Public Education Activities**
1) Children	Schools are inspected every two years. Summer camps inspected annually. Childcare centers inspected annually.	Fire Prevention Week: Fire Safety Trailer school visits Fire Safety Trailer attends summer festivals, scouts, beavers, guides, summer camps and other groups. TAPP-C program	Y	Inspect school annually	Expand and enhance school programs Learn Not to Burn program
2) Seniors	Retirement homes are inspected annually.	IFRS attends the Sandy Cove home show and emergency day, speaks with residents and conducts fire extinguisher training and fire safety house training.	Y	Continue inspection cycle	Enhance Older and Wiser content and expand audience Target home smoke alarm program to areas with senior populations
3) All Residents	Smoke Alarm Program Inspections upon request / complaint Inspection of multi-unit residential	IFRS distributes public education materials during holidays, public events and on a seasonal basis. Billboard advertising and advertisements with tax bills are also conducted. Fire Safety Trailer - The Town has a Fire Safety Trailer that is divided into two sections. The first section teaches fire safety in the living and kitchen areas, to both children and adults. Smoke Alarm Programs and Public Events - The on duty crews conduct smoke alarm programs as well as attend public events. During these events the crews hand out materials and speak with the public about fire safety.	Y	Annual inspections of apartments or multi-unit residential buildings	Use community risk profile to target areas for enhanced smoke alarm program delivery
4) Industrial / Commercial	Inspection of industrial area every 2-3 years.		Y	Continue inspection cycle.	Provide fire safety education to employees as a fee for service (e.g. fire extinguisher training)

5.6 Workspace

The FPO workspace was located at Station #3 until 2012. The FPO now works from IFRS Headquarters. The office is suitable; however, there are some space limitations. The prevention vehicle is equipped with a laptop and printer to issue letters and Notice of Violations to property owners while on site. Firehouse Software is currently not used to perform these tasks as the server is not available remotely. IFRS currently plans to acquire an iPad to remedy this records management challenge.

5.7 Fire Prevention and Public Education Division Summary and Recommendations

The Town of Innisfil currently carries out fire prevention enforcement and public fire safety education programs, within the guidelines of the Fire Protection and Prevention Act, 1997 (FPPA), and is meeting the legislated responsibilities of the FPPA. The fire prevention and public education efforts of the IFRS target the first two lines of defence of the Comprehensive Fire Safety Effectiveness Model but are limited by available resources.

The Fire Chief and the FPO determine the target number of inspections each year, however, no formal inspections schedule or performance measures currently exist. The FPO conducts fire investigations and assists the OFM with their investigations as required. Ideally, with an increased focus on public education and fire prevention, the Town will experience a reduction in annual fires and therefore reduce the number of investigations required.

As a result of our review and assessment of the Fire Prevention and Public Education Division, we recommend that:

- *Priority be given to implementing and expanding public safety education programs to address the vulnerable populations identified within the Community Risk Profile and areas of the community where high risks are predicted or emergency response times are extended due to factors such as long travel times (e.g. rural or remote areas).*
- *Additional staff resources be added to the division to broaden and enhance the public education programs being developed and delivered to the community. Additional personnel could also assist the FPO with fire prevention inspections, enforcement and investigations in order to divide the current workload. This will be essential to the optimization of the first two lines of defence.*
- *The Town continue and potentially enhance utilization of on-duty crews and volunteer firefighters to optimize the delivery of the Smoke Alarm Program.*
- *Utilizing the Community Risk Profile the IFRS should emphasize the Home Smoke Alarm Program as the "first line of defence" in areas of the community (such as rural residential areas) where extended emergency response times are present due to factors such as increased travel times. It is also recommended to prioritize delivery of the new program to areas of known risks such as older building stock or areas that have experienced historic fire loss.*
- *Formalized and specific performance measures for fire inspection cycles be developed based on the identified risks within the Community Risk Profile. Once developed, these performance measures should be tracked annually to measure division performance and reported to Council.*
- *All fees for service be reviewed and revised on an on-going basis to ensure that they accurately represent the fiscal realities of the services.*

6.0 FIRE SUPPRESSION

The Town of Innisfil is experiencing growth and development in its urban centres. As with many Ontario municipalities, these urban settlements are surrounded by rural, agricultural and open space. Providing emergency response to meet the needs of the community centres as well as the rural areas in the form of firefighting resources that could effectively mitigate a fire in a timely manner can be difficult and challenging. Travel distances and water supply are only two factors that can impact the ability to provide this type of mitigation within an established time frame. The establishing by-law outlines the following roles and responsibilities regarding the management and operation of firefighting and related duties:

- Prevent, control and extinguish fires;
- Perform rescue operations including ice/cold water rescue within established guidelines and procedures;
- Respond to health related emergencies pursuant to the 1st Response Guidelines and Procedures;
- Respond and assist at such emergencies when required by the Fire Chief while on duty and when available off duty;
- Render first aid;
- Conduct pre-firefighting operations planning;
- Conduct in-service fire prevention inspections of all classes of occupancies;
- Perform apparatus maintenance and cleaning duties at the stations; and

  Such other duties as may be assigned.

6.1 Suppression Staffing

As discussed in previous sections, Innisfil Fire and Rescue Service (IFRS) operate as a composite fire department with 12 full-time and 96 volunteer suppression staff. The full-time complement of four captains and eight firefighters operates out of Station 1 in Alcona. Volunteer suppression staff operate from all four existing stations, with complements of four volunteer captains and 20 volunteer firefighters based at each location. The current minimum staffing assignments per station and apparatus are summarized below in ***Table 7***.

Table 7: Current Stations, Apparatus & Minimum Staffing

Station	Station Address	Apparatus	Minimum Staffing
1 – Alcona (Headquarters)	780 Innisfil Beach Road	Rescue Pumper Pumper Tanker 30 Metre Ladder Pumper/Air Boat Pick-up (x2)	2 full time 3 volunteers 1 volunteer 1 volunteer
2 – Lefroy	885 Ardill Street	Pumper Tanker	3 volunteers 1 volunteer
3 – Stroud (new)	2394 Victoria Street	Pumper Tanker	3 volunteers 1 volunteer
4 - Cookstown	23 King Street North	Rescue (cube van) Pumper Tanker	1 volunteer 3 volunteers 1 volunteer

6.2 Fire Stations

The Innisfil Fire and Rescue Service currently operates from four fire stations. The stations are strategically located throughout the Town as shown in ***Figure 2***. ***Table 8*** provides a description of the existing stations.

Table 8: Existing Stations

Station	Description
1 – Alcona (Headquarters) 	IFRS' administrative staff, career firefighters and a complement of volunteer firefighters all work out of this station. Station 1 is an eight bay station built in 1988. It has auxiliary power. The building is in fair condition. Some maintenance activities have been completed since its construction. The roof was replaced in 2010 and the heating system was replaced in 2012. The 2013 budget has identified a total of $30,000 to update the washrooms and kitchen area. Storage is limited and provides a challenge to operate as Headquarters and a fire station. The combined dorm, kitchen and

	training room restricts some operations and activities. There is no existing office space provided or available for the volunteer officers.
2 – Lefroy  	Station 2, is a two bay block building that was built in the late sixties. It does not have auxiliary power. An old portable is on-site which is used as a make-shift training room. The station was scheduled for replacement in 2008. The station roof requires replacement and the portable is at the end of its lifecycle / usability. There was an issue with mould in the station in 2012, which was cleaned up, but may reoccur in the future. At the time of this Fire Master Plan, a piece of property has been obtained (near the intersection of 20 Side Road and Fifth Line) and an RFP for construction is scheduled to be released in the spring of 2013. IFRS is also considering moving the administrative staff (Headquarters) to this new station once replaced. This will provide more appropriate workspace for management staff and subsequently create additional space at the Alcona Station.
3 – Stroud 	Station 3, the newest of the four stations, was built in 2004 and has six truck bays. This station has auxiliary power. It was constructed as a joint project with the County of Simcoe Paramedic Services and also serves as a joint fire and ambulance station. The station contains a modern training room, office space and storage space. This building is in excellent condition and has had no major expenses over the past five years. It is meeting the needs of IFRS.
4 – Cookstown 	Station 4, constructed in the early sixties does not have auxiliary power. It has three truck bays. There is a small office and kitchen in the apparatus bay. The training room is an external portable purchased at the same time as the Station 2 portable (also at the end of its lifecycle /usability). This station is in poor condition. It would require extensive renovation to meet the needs of IFRS. Due to the age and nature of the building, this facility is in constant need of repair and maintenance. A rebuild of this station is recommended.

6.2.1 Future Station Considerations

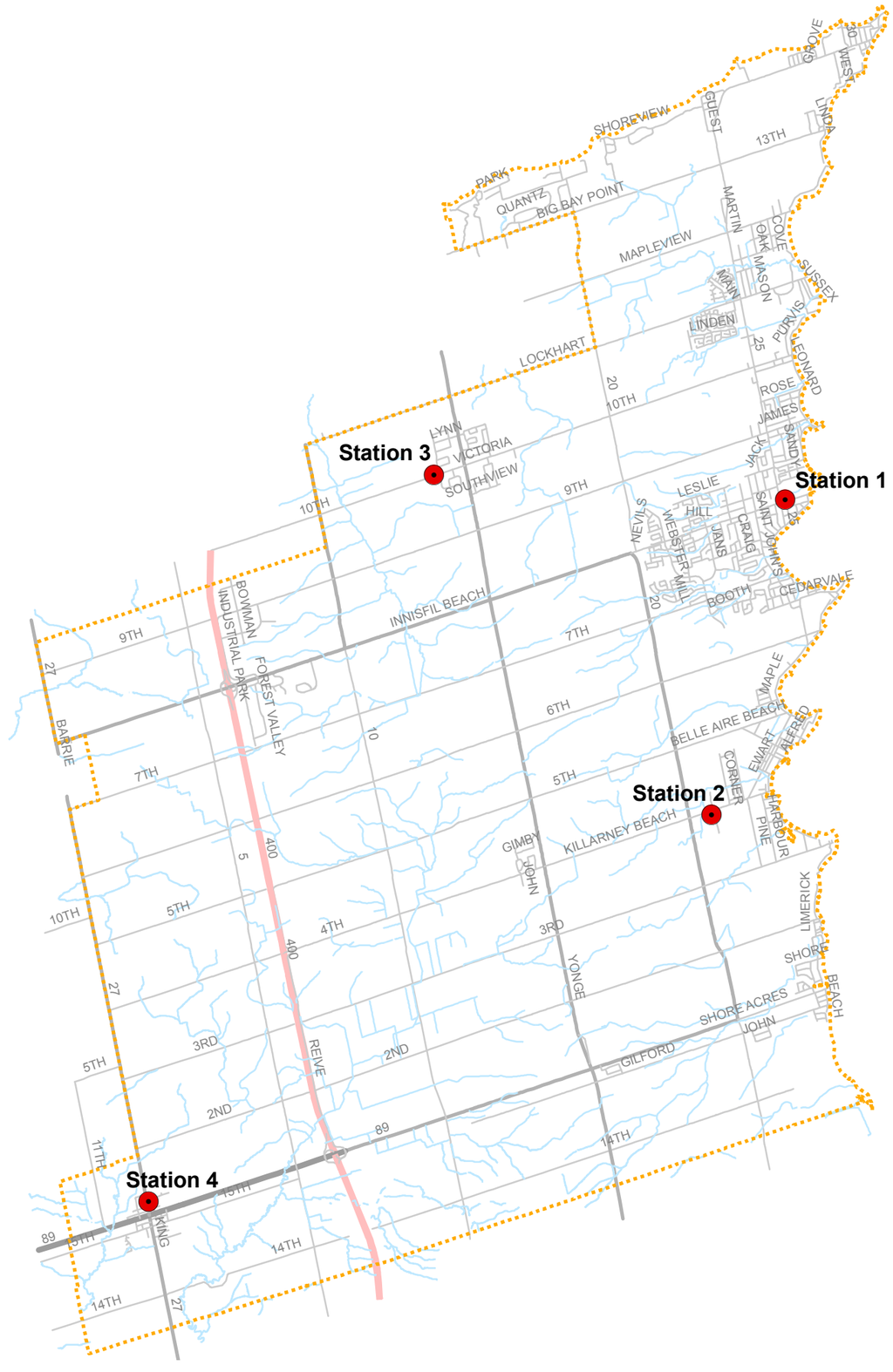
As a component of the Fire Master Plan, the existing station facilities were visited and reviewed. Plans for future station renovations, redevelopments or additions were also investigated, discussed and considered. Station planning was reviewed on their relevance and applicability going forward.

Due to its age, size, facilities and condition Station 2 requires replacement. There is no existing space on the present Station 2 property to build a new facility while maintaining an operational fire station. The property size at the existing Station 2 site is restricted in terms of accommodating a station and parking requirements. The Town of Innisfil owns property on the northwest corner of the intersection of 20 Side Road and Third Line, less than two kilometres from the existing Station 2 site. This property was assessed as an alternate location for Station 2. Consideration for other opportunities, such as property near 20 Side Road and Fifth Line may also be considered for a Station 2 location.

Station 4 is also in need of replacement, due to its age, condition, size and facilities. The Town has purchased property adjacent and connecting to the existing Station 4 lot. Due to the lot size, Station 4 apparatus and equipment will need to be temporarily relocated during construction of a new station facility. The Town should consider acquiring property to the south of existing Station 4 in order to provide sufficient parking for volunteer firefighters.

The Town is also planning for the addition of a fifth fire station at the intersection of 13th Line and 25 Side Road, in order to serve the planned development, including Friday Harbour, at Big Bay Point. This station is scheduled to be a two bay station anticipated to open in 2015.

Potential new facilities should consider or investigate opportunities for shared facilities, such as EMS (as in existing Station 3). The configurations and responses associated with the new and proposed stations are assessed below.



Legend

- MunicipalBorder
- Firehall
- <all other values>
- EXPRESSWAY
- HIGHWAY
- MAJOR ROAD
- HIGHWAY_RAMP; LOCAL

Figure 2: Existing Fire Station Locations

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL
FIRE MASTER PLAN

2021 FUTURE DO NOTHING
FIRST RESPONSE

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Pump - 4 Firefighters

STATION 2
Pump - 4 Firefighters

STATION 3
Pump - 4 Firefighters
Aerial - 3 firefighters
District Chief

STATION 4
Rescue - 2 Firefighters
Quint - 4 Firefighters

STATION 5
Pump - 4 Firefighters
Rescue - 2 Firefighters

STATION 6
Pump - 4 Firefighters

STATION 7
Pump - 4 Firefighters

Travel Time	% Covered
<= 4 minutes	70%
<= 5 minutes	83%
> 5 minutes	17%

0 0.5 1 2 km

SCALE 1:XXX

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 04/18/12

6.3 Emergency Response

The Comprehensive Fire Safety Effectiveness Model recognises the high importance of the first two lines of defence in mitigating the potential of a fire occurring. In the event a fire does occur and emergency response is required, the model defines the third line of defence as:

> "***III. Emergency Response (Suppression)****:*
>
> *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."*

In our view the three lines of defence represent a proven model for optimizing the benefits of pro-active prevention and education programs; appropriate use of standards and code enforcement and, as the model suggests, the provision of emergency response as the 'fail safe' for when these efforts when incidents occur despite all efforts towards optimization of the first two lines of defence.

A core component of evaluating the overall effectiveness of providing fire suppression services includes considering a measurement-supported set of performance targets (i.e. service standards) and setting clear goals and objectives. Within Ontario there is no specific legislated standard that a community must achieve with regard to the type of firefighter (career/part-time/volunteer) or the number of firefighters required to respond to any given incident. The FPPA does require that a municipal Council assess this level of resources based on determining its "*local needs and circumstances"*.

To assist in the evaluation of the level of fire suppression resources required by the Town of Innisfil this study identified the different guidelines and standards that are currently relevant within Ontario. Through comparison of each with a typical fire scenario this analysis presents insight into the industry best practices based on a risk-based approach.

6.4 Superior Tanker Shuttle Accreditation

The Superior Tanker Shuttle Accreditation is a proprietary process managed by the Fire Underwriters Survey™ (FUS) a national organization administered by SCM Risk Management Services Inc. formerly CGI Insurance Business Services, formerly the Insurers' Advisory Organization and Canadian Underwriters Association.

As a method to provide water for firefighting in areas without municipal water supply the Superior Tanker Shuttle Accreditation includes a process that includes the following:

- *set up pumper apparatus at fire event and deliver water from temporary storage facility (ex. portable tank) through fire pump to fire;*
- *draft water (from a location where water supplies are known to be reliable and accessible) into a mobile water supply apparatus;*
- *move water from source location to fire event using mobile water supply apparatus;*
- *dump water into temporary storage facility (ex. portable tank) at fire event location; and*
- *repeat shuttle cycle.*

The 'Levels of Service' assigned with the Tanker Shuttle Accreditation (e.g. Standard Tanker Shuttle Service or Superior Tanker Shuttle Accreditation) are determined by the alternative water supply performance and capabilities provided by the fire service.

Innisfil Fire and Rescue previously attained the accreditation. Sustaining the accreditation requires regular recertification which is planned for 2013 (required to be complete before June 2013). Benefits to the community include reduced insurance rates for both residential and commercial property owners subject to their respective policy conditions. The planned increases to the size of the tankers within the IFRS fleet, as discussed in ***Section 8 – Apparatus and Equipment / Fleet Review***, is expected to assist with the tanker-shuttle program.

6.5 Fire Dispatch Operations

Innisfil Fire and Rescue Service has implemented a number of protocols to be observed for emergency response. As a component of fire dispatch, a paging procedure is followed when an emergency call comes in to initiate the volunteer suppression staff response. There are also response protocols in place for mutual aid.

The Town of Innisfil currently contracts emergency call taking and fire dispatching through an agreement with the Barrie Fire Department.

The current agreement with the Barrie Fire Department was enacted on January 1st, 2013 and will be in place until December 31st, 2016. The agreement details a fee procedure and the provision of infrastructure and operations activities by the Barrie Fire Department. Performance criteria are also included. Transferring dispatching services from the Simcoe Police Services to the Barrie Fire and Emergency Services has improved dispatch operations for the Innisfil Fire and Rescue Services.

A dispatch procedure is in place to identify operations for a variety of potential emergency calls. The procedure contains firefighter contact information, location of apparatus, fire station boundaries, and volunteer paging procedures. Once a call is received from dispatch the following paging procedure is followed:

- Station Alert Alcona to be activated when requesting the Rescue #1 to respond.
- Off duty full time firefighters
    - Structure fire Station #1
    - Commercial Structure Fire All Districts OR Off duty Full-time Firefighters are paged at the request of the Incident Commander
- Station Call Out
    - When paging a station out activate tones three (X3) times. (First Call)
    - If No Response from station after 4 minutes, activate tones (X1) and state paging for station (1, 2, 3 or 4) this is your second set of tones.
    - If no response after 8 minutes activate tones (X1) for the responding station as well as another station (closest station to the call).
- All station page-outs require "cross-street" and address to be given.

The current agreement with Barrie for call taking and fire dispatch reflects best practices and an effective strategy for the Innisfil Fire Rescue Service in providing these services.

6.6 Fire Suppression Performance Targets

To assist in determining the level of fire suppression resources required by Town of Innisfil and the Innisfil Fire and Rescue Services, ***Appendix B*** provides a detailed evaluation of the current fire suppression staffing guidelines and standards utilized across Ontario.

In our view the framework for identifying community risk and deploying sufficient firefighting resources to address the community risk present is accurately presented in PFSG 04-08-10 *Operational Planning: An Official Guide to Matching Resource Deployment and Risk*. Within these analyses of fire suppression performance factors we have included consideration of the staffing deployment of PFSG 04-08-12 as well as the relevant NFPA Standards.

For comparison purposes this assessment utilizes the example of a fire risk scenario in a 2000 square foot, two-story single-family dwelling without a basement and with no exposures present. This represents a typical home of wood frame construction located in a suburban neighbourhood having access to a municipal water supply including fire hydrants. Within this study this occupancy would be classified as a Group C - Residential Occupancy (moderate risk).

In our view best practices within the Ontario fire service to address firefighter health and safety, and the operational tasks associated with the fire risk scenario presented reflect a staff deployment of four firefighters arriving on the same apparatus or alternatively arriving on scene approximately simultaneously for the initial response, and fourteen firefighters deployed for a depth of response.

For responses to fire risks with a high or extreme risk level additional firefighting staff deployment should be automatically dispatched. This can be achieved by deploying other apparatus, stations or through automatic aid and fire protection agreements with other communities.

Determining an appropriate travel time performance target for both the initial response and depth of response is the second major component of determining fire protection service levels. PFSG 04-08-12 does not contain a specific performance target for travel time in comparison to those in NFPA 1710 and 1720. Travel times for emergency response vehicles can be impacted by many factors such as traffic congestion, traffic management systems including traffic lights and stop signs, and extended travel times due to converge of large geographic areas.

In our view identifying a travel time target should include consideration of the overall community fire protection plan including optimization of the first two lines of defence. Emphasis should also be placed on the importance of time with respect to the potential of fire growth and extension from the area or room of origin. For example, the presence of residential sprinklers would have a positive effect on the control and containment of the fire and allow for consideration of extended travel times.

Identifying travel time performance targets should be a decision considered by Council in response to the Community Fire Risk Profile, and community needs and circumstances as defined by the FPPA.

In summary the evaluation concludes the following:

Initial Response:

Initial response is consistently defined as the number of firefighters initially deployed to respond to an incident. Fire service leaders and professional regulating bodies have agreed that until a sufficient number of firefighters are 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 vehicle, or additional firefighters arrive on scene to have sufficient staff to commence these activities.

Our evaluation of initial response concludes that deploying a minimum of four firefighters, either arriving on the same apparatus or assembling on-scene, prior to initiating these activities is current best practices within Ontario.

An initial response of four firefighters once assembled on-scene is typically assigned operational functions. The Officer in charge shall assume the role of Incident Command; 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 some limited fire suppression 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 an additional depth of resources that may not have been dispatched as part of the initial response.

We recommend that the Town of Innisfil establish a performance measure target for initial response by the Innisfil Fire and Rescue services of deploying four firefighters either arriving on the same apparatus or alternatively on scene approximately simultaneously to all reported structure fires, and that the fire and rescue service monitor this performance measure including reporting to Council on an annual basis.

Subject to the on-going monitoring of the recommended performance measure target we recommend that the Innisfil Fire and Rescue services assess the travel time and performance percentage objectives identified within the Fire Suppression Performance Targets (***Appendix B***) in developing further enhanced performance measures target for initial response.

Depth of Response:

Based on the fire risk scenario presented, our evaluation concludes that a depth of response of fourteen firefighters reflects current best practice within Ontario. The objective of this performance measure is the assembly of fourteen firefighters on-scene to safely complete the operations required to mitigate a fire in a typical single family detached dwelling, assessed as having a moderate risk level. Similarly to the initial response, the assembly or deployment can be achieved in many different ways including multiple apparatus, multiple fire departments, or any combination of full-time, part-time or volunteer firefighters.

Each of these initial response and depth of response performance targets should be considered minimum staffing levels, based on the example fire risk scenario presented as a typical single family detached dwelling assessed as having a moderate risk level. Incidents involving an extension of the original fire, or higher risk occupancies will require additional resources.

For the purposes of this analysis this report recognizes the variable turn out times of volunteer firefighters. The depth of response target references the components of travel time and assembly time of an appropriate number of volunteer firefighters to effectively mitigate the prescribed emergency.

The strategy to dispatch a higher number of volunteer firefighters as part of the initial response to a high or extreme level of risk occupancy can be achieved in a number of ways. These include:

- *Dispatching of additional staff and apparatus from the same fire department;*
- *Call back of firefighters (full-time or volunteers) to staff additional apparatus;*
- *Fire Protection Agreements (Automatic Aid Agreements) with other fire departments to provide additional firefighters and apparatus.*

Based on industry standards, guidelines and best practices, we recommend that the Town of Innisfil establish a performance measure target for depth of response by the Innisfil Fire and Rescue Services of deploying fourteen firefighters to all confirmed, reported or potential structure fires (including alarm activations).

Subject to the ongoing monitoring of the recommended performance measure target we recommend that the IFRS assess the travel time and performance percentage objectives identified within the Fire Suppression Performance Targets (***Appendix B***) in developing further enhanced performance measures target for depth of response. The analysis included within aims to provide an initial response of four firefighters arriving on-scene simultaneous in four minutes of travel time. The depth of response considerations focused on the ability to assemble 14 firefighters on-scene, in a timely manner.

Utilizing the Community Fire Risk Assessment we recommend that emergency response protocols for occupancies identified as having high or extreme risk be developed to automatically dispatch additional fire suppression resources from the IFRS or alternatively developing Fire Protection Agreements with neighbouring communities where necessary.

6.7 Current Fire Suppression Operations

As a composite fire department, IFRS relies on full time and volunteer suppression staff to respond to emergency calls throughout the Town of Innisfil.

6.7.1 Full Time Suppression Operations

Station 1 operates as a composite station, with both full time and volunteer suppression staff. It is the only station in the Town of Innisfil that currently houses full time suppression staff. Four full time Captains and eight full time Firefighters respond from the station as four crews of three. Full-time firefighters work shifts of 10 hour days, 14 hour nights. A full time crew is on-duty 24 hours per day, seven days a week. This provides a minimum staffing of two full time suppression staff. The on-duty crew typically responds in the IFRS' Rescue #1 (rescue / pumper). The full-time crew provides an assured response, however, staffing a first responding apparatus with only two firefighters does not meet the best practice recommendation for initial response of four firefighters arriving on-scene simultaneously. If the full time crew arrives on-scene prior to additional volunteer firefighter resources responding, there are not enough resources available to safety perform the first response fire scene responsibilities, as described in ***Appendix B***.

6.7.2 Volunteer Suppression Operations

All four of the existing IFRS Stations house complements of volunteer firefighters. Recruitment and retention of volunteer firefighters continues to be a major challenge for the fire service across Ontario. Historically the culture of small towns and communities were reflected within the members and culture of their volunteer fire departments. In the past, volunteer departments were comprised of business owners and residents who were able to leave their place of employment or home to respond to the fire station alarm for the call to duty.

Daytime staffing of volunteers firefighters within the first 10 minutes has become an issue. The first volunteer truck to leave the station is generally understaffed (three firefighters). During 2011, the average number of volunteers available per station after the first 10 minutes was less than 12 firefighters.

Changes in employment conditions and individual priorities for work/life balance have negatively impacted recruitment and retention of volunteer firefighters across Ontario. The Town of Innisfil is no exception and has responded by introducing proactive volunteer firefighter recruitment strategies, and specifically targeting candidates that are available during normal business hours Monday through Friday. There have been some challenges in ensuring the priorities of the fire and emergency service (e.g. daytime availability, location of employment, location of residence, etc.) are evaluated and considered while following the Town's Human Resources hiring requirements. Targeted recruitment to improve the challenge of daytime volunteer response needs to be a priority when considering IFRS hires.

As indicated within the Fire Suppression Performance Measures (***Appendix B***) monitoring the actual number of firefighters responding as the initial response and depth of response are critical components of understanding the overall operational effectiveness, and managing the health and safety responsibilities of the municipality. Volunteer firefighters should respond to their Station and travel to emergency scenes on IFRS apparatus or vehicles. The practice of responding directly to the scene is not best practices regarding health and safety.

The current complement of 20 volunteer firefighters at each station includes a number of members available during normal business hours. As shown in the assessment below, certain stations have better daytime availability than others. Sustaining a complement of volunteer firefighters that are available during normal business hours to provide the level of initial response and depth of response recommended is a significant challenge the fire and rescue service is currently facing.

This review assesses the actual staffing levels achieved for initial response and depth of response utilizing the emergency call data from 2011. Based on our experience with volunteer models our analysis focused on the number of volunteers that actually responded during regular business hours, Monday through Friday (8 am to 6 pm) in comparison to all other times.

Figure 3 reflects the actual number of volunteer firefighters that responded as part of the initial response from Station 1 in 2011. The analysis indicates that this station is not able to provide the recommended initial response of four firefighters at any time of day for fire and all other calls through volunteer response. Station 1 has a minimum of two full time suppression staff on-duty 24 hours a day, seven days a week. Therefore the combined response of the full-time and volunteer suppression staff at Station 1 can meet the initial response staffing of four firefighters.

Figure 3: Station 1 Actual 2011 Volunteer Initial Response

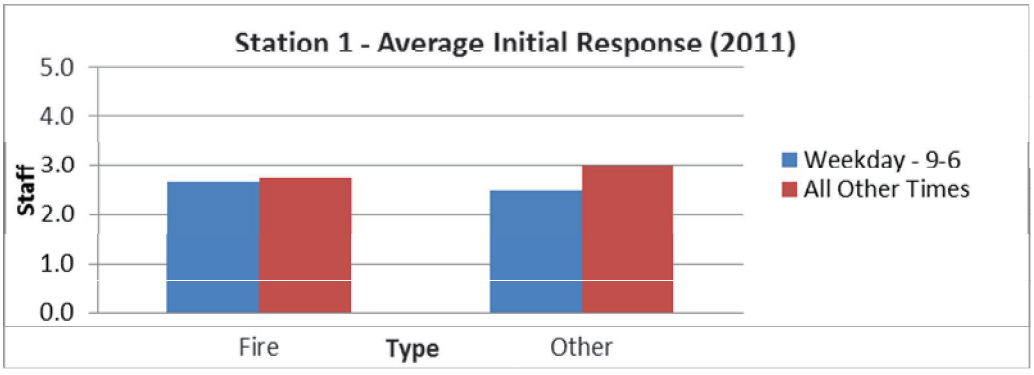


Figure 4 below reflects the actual number of volunteer firefighters that responded as part of the initial response from Station 2 in 2011. The analysis indicates that this station has a higher average of daytime responding volunteers than that of Station 1 but is still not able to provide the recommended initial response of four firefighters at any time for fire and other calls. (Note that there were no fire calls during business hours in 2011).

Figure 4: Station 2 Actual 2011 Initial Response

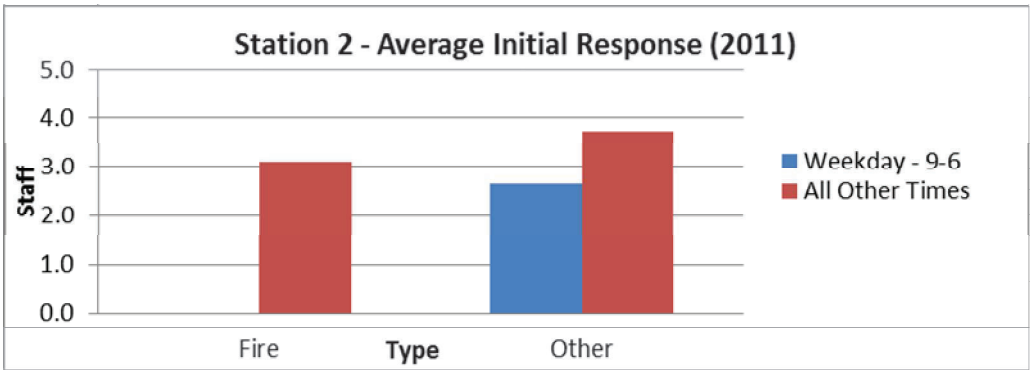


Figure 5 below reflects the actual number of volunteer firefighters that responded as part of the initial response from Station 3 in 2011. The analysis indicates that Station 3 was historically able to provide the recommended initial response of four firefighters outside of business hours for fire calls. It was not able to meet the recommended initial response for other calls during all times of day. (Note that there were no fire calls during business hours in 2011).

Figure 5: Station 3 Actual 2011 Initial Response

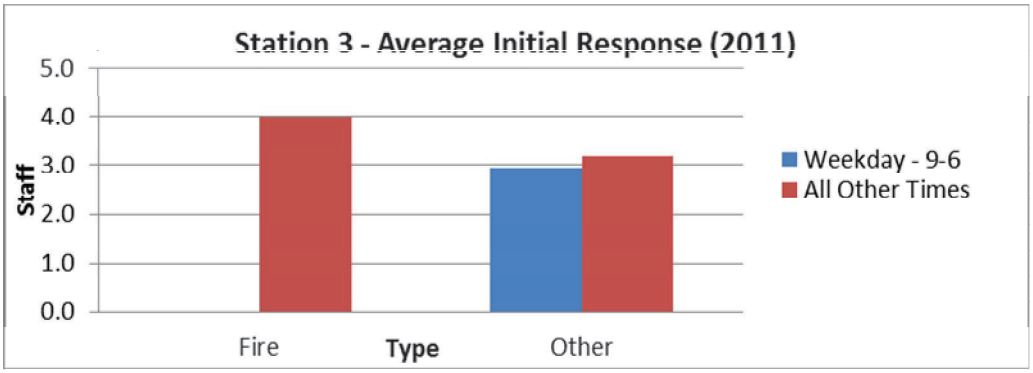


Figure 6 below reflects the actual number of volunteer firefighters that responded as part of the initial response from Station 4 in 2011. The analysis indicates that this station was able to achieve the recommended initial response of four firefighters during normal business hours but not at all other times for fires. At all other times the station is unable to achieve the initial response staffing level recommended.

Figure 6: Station 4 Actual 2011 Initial Response

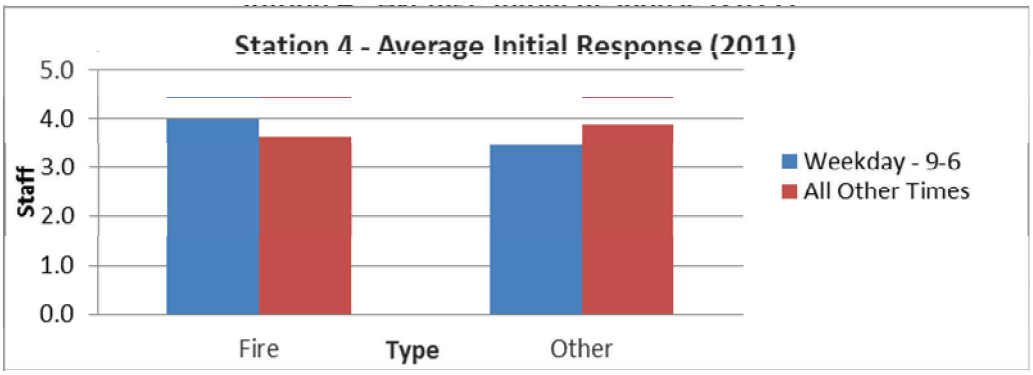


Table 9 below shows an average of the actual number of staff that responded as part of the initial response per apparatus in 2011. The analysis indicates that the fire and rescue service was not able to achieve the recommended initial response of four firefighters on any of their apparatus that responded to calls, with the exception of Pumper 4.

Table 9: All Apparatus Actual 2011 Initial Response

Staffing - All Calls	
Apparatus	**Average**
Pumper 1	2.9
Pumper 2	3.9
Pumper 3	3.7
Pumper 4	4.0
Tanker 1	1.6
Tanker 2	1.6
Tanker 3	1.8
Tanker 4	1.6
Rescue 4	3.3

The Innisfil Fire and Rescue services have directed previous recruitments at targeting volunteer firefighters that would be available during normal business hours. This strategy has worked well in the past; however, more recent recruitments have not provided sufficient candidates to sustain the number of volunteer firefighters available during normal business hours to provide the recommended initial response. In comparison with the most recent trends in volunteer models, the current complement of 24 volunteer suppression staff assigned to each station is at the low end of the optimal range for the effective operation of a volunteer fire station. Personal commitments and balancing work/life priorities with the desire to fulfill their role as volunteer firefighters is becoming a challenge for many volunteer firefighters. Optimizing the operational effectiveness and improving the initial and depth of response of the fire and rescue service relies on the volunteer firefighters responding and staffing multiple pieces of apparatus at each fire station. This is becoming an increasingly difficult challenge, especially during weekly daytime / normal business hours when many of the volunteers are outside of the Town for regular employment.

Based on our analysis we are recommending that the Town of Innisfil consider increasing the station complement of volunteers from the current 24 to 30. This would include adding a volunteer captain position per station for a total of five volunteer captains and 25 volunteer firefighters per station. This would be a net increase of four volunteer captains and 20 volunteer firefighters to staff the existing stations. In addition, the proposed new Station 5 would also require a complement of five volunteer captains and 25 volunteer firefighters.

6.7.3 Volunteer Responder Technology

One of the challenges with volunteer response is the unknowns of who is responding to the call and what the expected arrival times to the station are. Technology has been developed and is becoming more prevalent in the industry to assist with this challenge. Programs are available to provide resource management tools to volunteer fire services that can indicate the schedules, availability, location and response status in real-time, with real-time updates directly to the fire station. This can be a very valuable tool when staffing apparatus with volunteers. Having information readily available to accurately estimate en-route and arrival times of responders can assist with the important decision to wait to staff a truck with the recommended four firefighter response or to leave the station for the sake of response time. It is recommended that IFRS investigate this technology. Programs such as this are presently in use in the neighbouring municipalities of Clearview Township, Township of Springwater, Township of Essa and Township of Oro-Medonte.

6.7.4 Volunteer Turnover

With the implementation and enforcement of mandatory training attendance requirements as of 2011, volunteer attrition has been a recent challenge. This is evident by the number of new volunteer firefighter hires, shown in ***Figure 7***. As the mandatory training requirements become accepted within the culture of the fire and rescue service, it is predicted that turnover will revert back to approximately five to 10 volunteers per year. Although IFRS did implement a recruit training program in 2011/2012 the number of new hires continues to require a great deal of resources. Recruitment and retention statistics should continue to be tracked and monitored by the department.

Figure 7: IFRS Volunteer Hires (2008-2012)

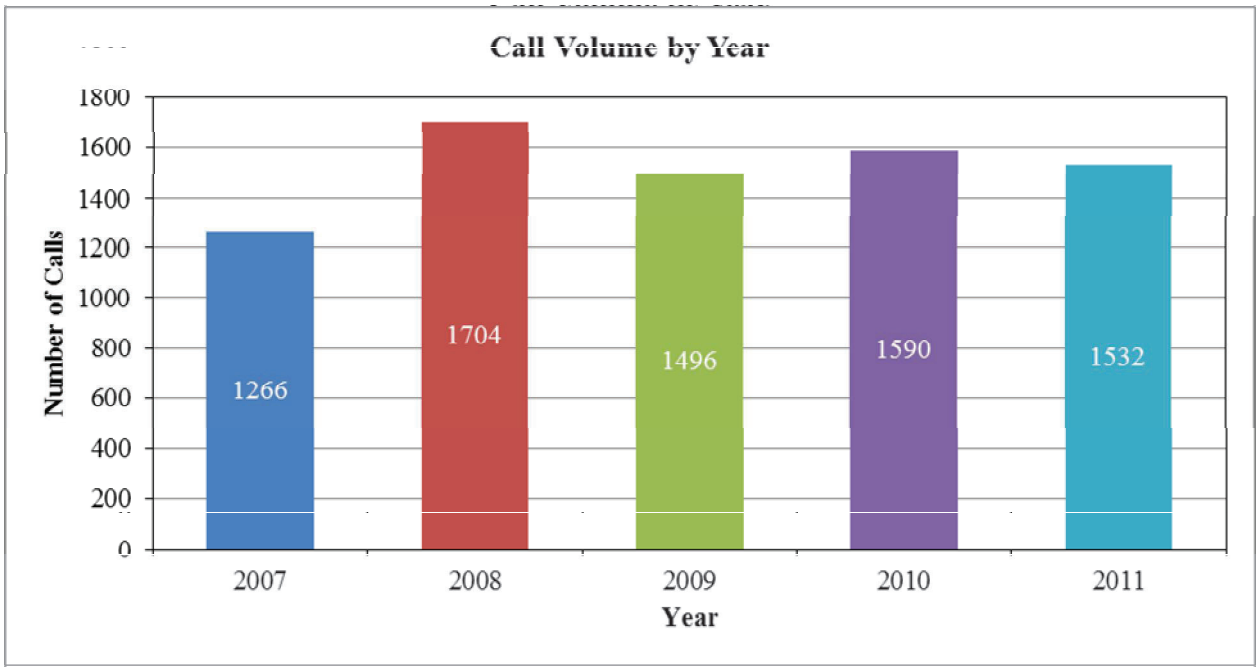
6.8 Historical Call Data Analysis

6.8.1 Emergency Call Volume

A summary of the volume of emergency fire and rescue calls in the Town of Innisfil for the period 2007 to 2011 is presented in ***Figure 8***. Over this period the fire and rescue service has experienced relatively consistent call volumes. The five year average call volume is 1518 calls, from 2007 to 2011.

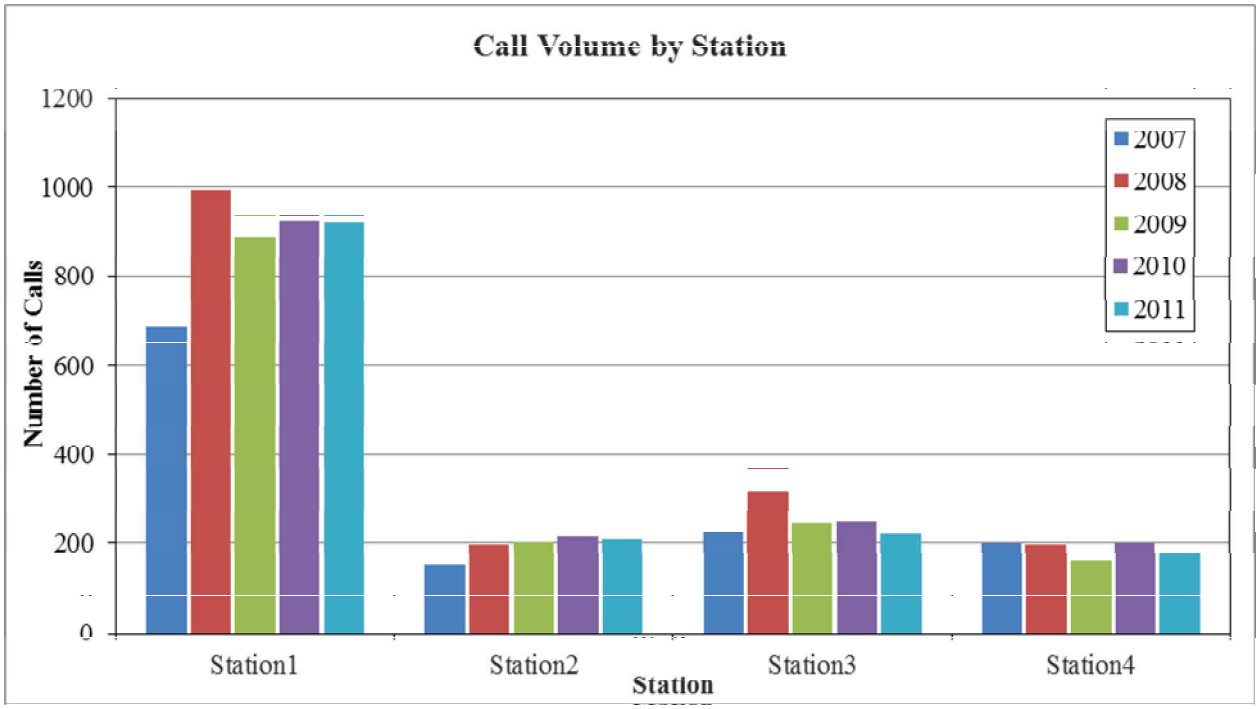
Figure 9 illustrates the distribution of calls to each of the stations by year. Station 1 responds to the majority (58 percent) of calls. Station 3 responds to approximately 16 percent of the total Innisfil emergency fire and rescue calls and Stations 2 and 4 each respond to approximately 13 percent.

Figure 8: Historical Annual Call Volume (2007-2011)



(Data provided by Innisfil Fire and Rescue Staff)

Figure 9: Historical Call Volume by Station (2007-2011)



(Data provided by Innisfil Fire and Rescue Staff)

6.8.2 Emergency Call Incident Types

There were a total of 941 fire-related calls over the five year period from 2007 – 2011 resulting in an average of approximately 188 calls per year. ***Table 10*** gives the detailed statistics of numbers of calls within the major categories of medical, fire, alarms, complaints, and rescue/extrication.

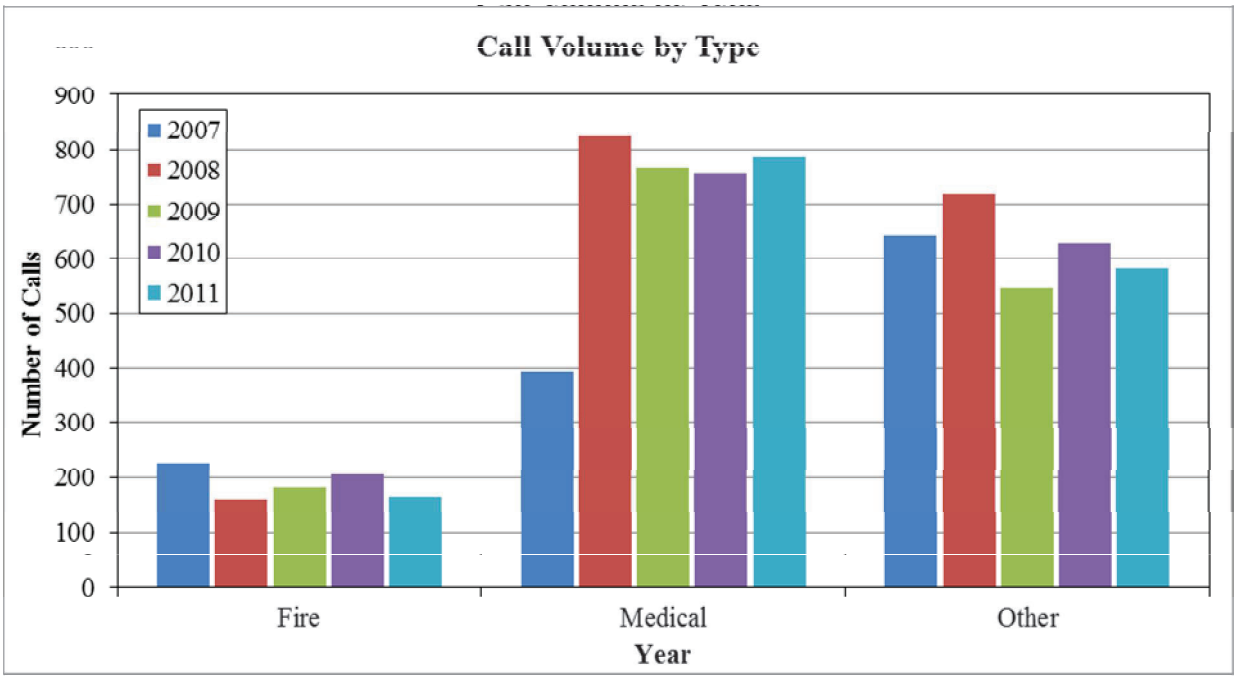
The fire-related calls represent approximately 12% of the total calls. Medical calls are the most frequent type of emergency response call and comprise approximately 46% of the total calls. ***Figure 10*** provides a breakdown of the call volume by type for the years 2007 to 2011.

Table 10: Summary of Incident Types

Incident Type	2007	2008	2009	2010	2011	Total Calls	Percent of All
Medical	394	826	766	756	785	3527	46%
Fire Related	228	159	183	207	164	941	12%
Alarms	270	434	263	291	287	1545	20%
Complaints	127	56	99	152	139	573	8%
Rescue/Extrication	247	229	185	184	157	1002	13%
Total	1266	1704	1496	1590	1532	7588	100%

(Data provided by Innisfil Fire and Rescue Staff)

Figure 10: Historical Call Volume by Type (2007-2011)



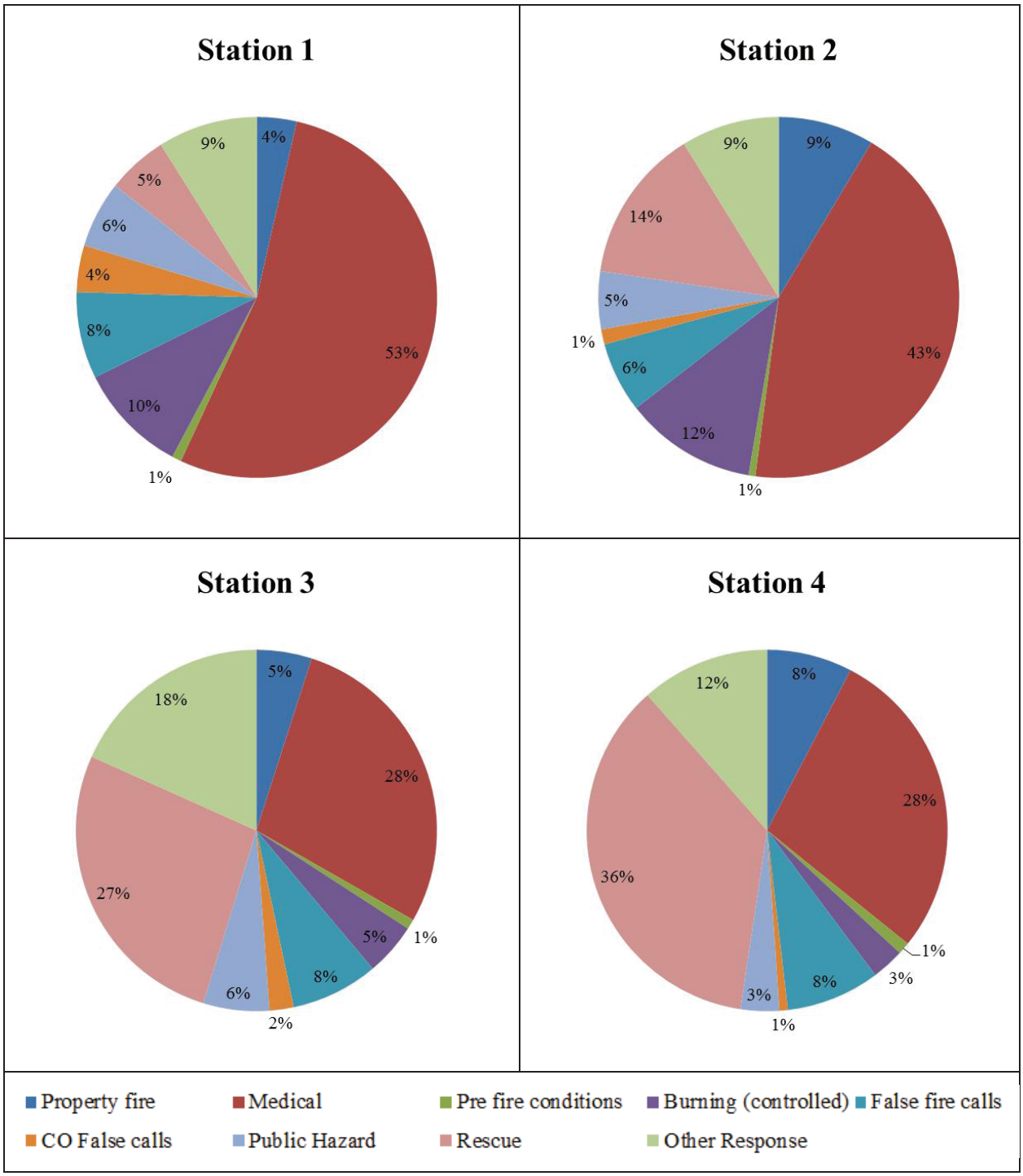
(Data provided by Innisfil Fire and Rescue Staff)

As shown in ***Figure 10*** above, the volume of fire calls has remained relatively stable, with a slight increase in 2007 and 2010. Experience across the province has shown that the optimization of the first two lines of defence can have a positive impact on mitigating emergency call volume growth and in some instances can result in a reduction.

Based on our analysis the efforts of the Innisfil Fire and Rescue Services to enhance the delivery of public education and fire prevention programs (first two lines of defence) can be attributed at least in part to the downward trend of fire and other call volumes. The volume of medical calls has been increasing over the past four years. Based on our analyses of the Community Risk Profile this can in part be attributed to an increase in the seniors (65 and older) demographic within the community. Revisions to the tiered response agreement can also result in a decrease in medical call volume and therefore overall call volume. This would reduce some of the burden on the volunteer firefighter model.

Figure 11 shows the percentages of emergency calls by type responded to for each station. Generally, Station 1 and Station 2 experience similar call distribution and Station 3 and Station 4 experience similar calls. Station 1 and 2 are surrounded by greater urban areas and have a higher proportion of medical calls and controlled burning calls. Station 3 and Station 4 are located in more rural locations and respond to a greater volume of rescue calls compared to the other stations.

Figure 11: Percentage of Calls by Type by Station (2007-2011)



6.8.3 Response Time Assessment

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 time target) is a common industry best practice for reporting and understanding emergency first responder performance. Fire services commonly utilize 90th percentile response time data for performance tracking, system planning and resource deployment purposes. Five year averages of the annual 90th percentile times are displayed and discussed.

6.8.4 Dispatch Time

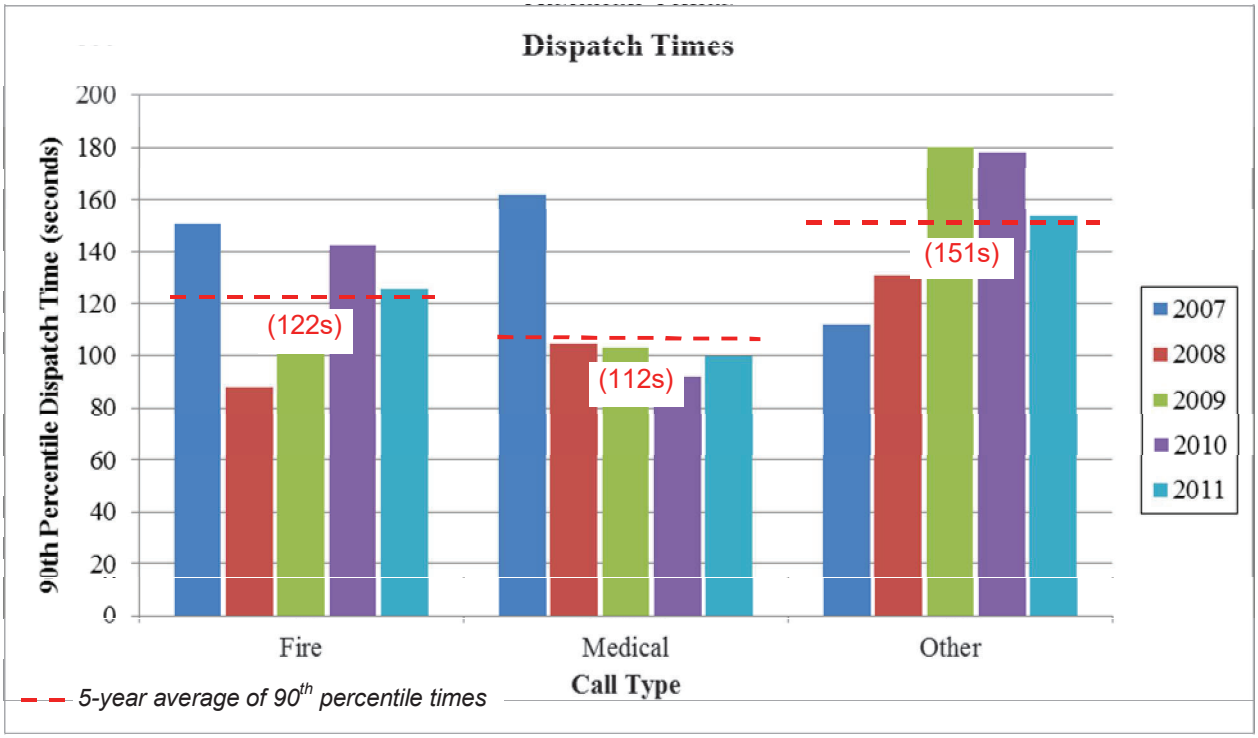
Dispatch time is defined as the time that it takes for the person responsible for *"alarm answering*", and "*alarm processing*" to be able to receive the call, and dispatch the appropriate apparatus and staff to respond to the emergency.

The Innisfil Fire and Rescue's historic (2007 to 2011) 90th percentile dispatch times were above the 80 seconds recognized best practice for medical calls. The historic 90th percentile dispatch times were also above the 90 seconds recognized best practice for fire calls and above the 90 second recognized best practice for all other types of calls. This means that the time it takes to dispatch the calls is higher than the recognized best practices for medical and fire calls.

As of January 1st 2013, dispatching services are now being provided by the City of Barrie. It is expected that dispatch times will improve. Tracking, measurement and review of dispatch times should continue on an annual basis. Performance targets included within the dispatch agreements should be referred to when reviewing data and any issues should be brought to the attention of the dispatch service provider.

The 90th percentile dispatch times for the Innisfil Fire and Rescue from 2007 to 201 are displayed in ***Figure 10***.

Figure 12: Historical Dispatch Time by Call Type (2007-2011)



(Source: Innisfil Call Data 2007-2011)

6.8.5 Turnout Time

Turnout time is defined as the time interval that begins from when the emergency response staff receives the required dispatch notification, and ends at the beginning point of travel time. Turnout times can vary significantly based on the use of either full-time or volunteer firefighters. Full-time firefighters have the benefit of being located within the fire station and are able to receive the call and safely staff the apparatus ready for response in a very short time frame. Best practices reflect a 60 to 80 second turnout time for full-time firefighters depending on the nature of the call.

In comparison volunteer firefighters must first receive the call to respond (via pager) travel to the fire station and then safely staff the apparatus in preparation for response. Volunteer firefighter turnout times can vary significantly depending on the location and availability of the individual when the call is received. This variable can have a significant impact on a fire departments total response time and therefore should be monitored on an ongoing basis.

Turnout time has not been recorded or tracked by IFRS or its dispatch provider historically. Turnout and travel time as a combined statistic were tracked and available. Therefore these statistics were analysed and presented within this report.

It is recommended that IFRS implement a system to separately track turnout time and travel time. Additionally, the turnout time for full-time and volunteer suppression staff should be tracked and recorded separately. These statistics should be reviewed and compared to industry performance measures on a regular basis, for example, as a component of preparing the IFRS annual report.

6.8.6 Travel Time

Travel time is defined as the time interval beginning when the assigned emergency response apparatus begins the en-route travel to the emergency, and ends when the apparatus arrives at the scene. Travel times for emergency response vehicles can be impacted by many factors such as traffic congestion, traffic management systems including traffic lights and stop signs, and extended travel times due to coverage of large geographic areas.

As turnout times and travel times have historically been recorded together for IFRS call data, it is not possible to isolate the travel time statistics. Turnout and travel time are assessed together for the time period of 2007-2011.

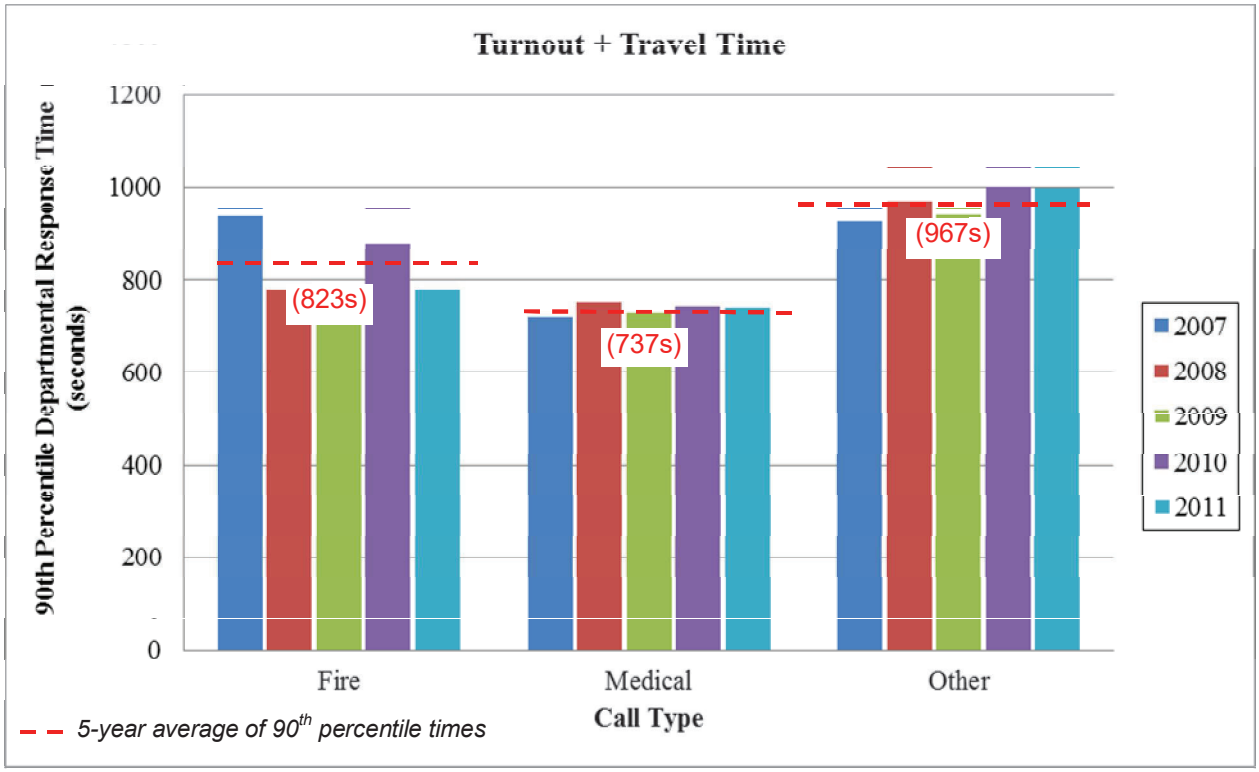
6.8.7 Turnout and Travel Time

Analyzing the combination of *"turnout time and travel time"* provides the opportunity to assess the two components of the total response time managed by the Innisfil Fire and Rescue services.

The five year 90th percentile for *"turnout time and travel time"* for the initial response to fire related calls was just under 15 minutes. For medical related calls the five year 90th percentile time for *"turnout time and travel time"* was approximately 14 minutes, and for other calls it was approximately 15 minutes.

Figure 11 presents a summary of the historical *"turnout time and travel time"* portion of the total response time for the initial response for the period 2007 to 2011.

Figure 13: Historical Turnout and Travel Time by Call Type (2007-2011)

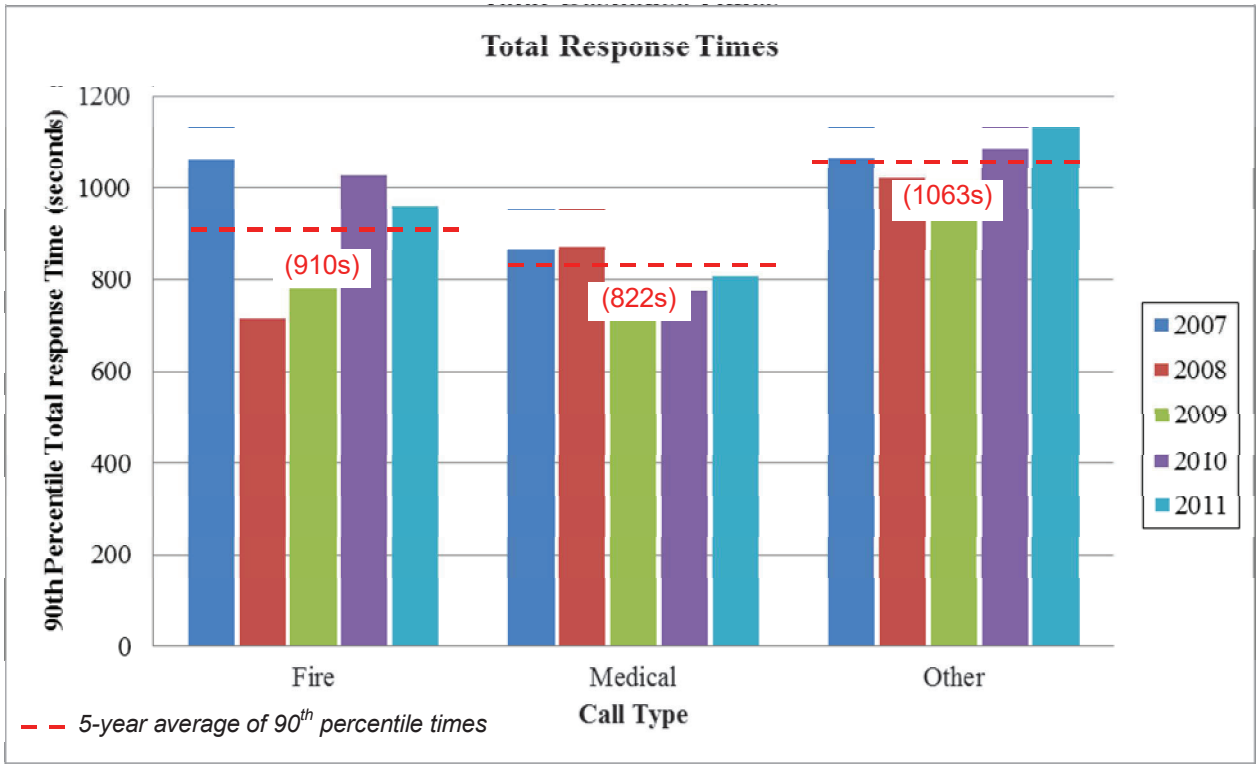


6.8.8 Total Response Time

As indicated within the Fire Suppression Performance Targets (***Appendix B***) measuring the total response time to an emergency call can be defined by three primary components: *dispatch time, turnout time*, and *travel time*. Together these components make up the total response time it takes for a fire and rescue service to receive a call either from someone at the scene with knowledge of the incident, identify the location of the emergency and dispatch appropriate vehicles and staff, travel to the scene of the incident, and set up to begin fire suppression or other required activities.

Figure 12 presents a summary of the historical total response time for the initial response for the period 2007 to 2011. Please note that the summation of the 90th percentile dispatch time and 90th percentile turnout plus travel time may not equal the 90th percentile total response time. In some instances the dispatch time for an incident was available but not the turnout plus travel time, or vice versa. Total response time statistics were only calculated when all three time components were available.

Figure 14: Total Response Time by Call Type (2007-2011)



6.9 Assessment of Response Coverage

The following sections detail the assessment of response coverage within the Town of Innisfil. Various methods were employed to assess IFRS' response coverage capabilities for existing conditions as well as for projected future conditions. A review of existing call data was carried out to determine IFRS' success in meeting established response performance targets. The analysis was carried out using ESRI's Network Analyst, a geographic information system (GIS) tool developed specifically for the purpose of assessing networks, such as roads.

6.9.1 Methodology

This section provides a brief outline of the scope and methodology used in order to provide insight into the modeling procedures adopted to assess existing and future response coverage and to test various combinations of fire suppression resources.

A GIS program was used to assess the fire and emergency service's response coverage. Digital copies of GIS layers were provided by the Town for the existing and future road networks. Relevant base road information, such as road length and speed, was extracted from the GIS data. The model was calibrated from the posted speed to a modelled speed, to more accurately reflect travel times of the fire response units. ***Table 11*** summarizes the modelled speeds used for the Town of Innisfil emergency response model.

Table 11: **Calibration Table**

Road Type	Posted Speed	Modelled Speed
Expressway	100	80
Highway	80	40-75
Major Road	50-80	40-75
Local	40-80	40-75

Industry performance measures used for the assessment were applied to two different horizons:

- Existing conditions (2012); and
- 10 year future horizon (2022).

The existing and future service area included the entire municipality.

This information, combined with the station locations, was used to build "response polygons" around each station. These polygons represent the coverage each station can provide in four minutes of travel time. This assesses whether the Town is providing adequate first response coverage according to the NFPA 1710 standard. A similar process was carried out to determine the eight minute travel time to assess the NFPA 1710 depth of response standard. This analysis also identifies the areas where the fire department is not currently able to achieve the response time elements or the staffing elements of the NFPA 1710 performance measure.

6.9.2 Analytic Results

This section documents the results of the analysis for the existing four station model (with existing automatic aid agreements, representing automatic response from Thorton Station in the Township of Essa) under existing conditions and the planned 5 station model (with existing automatic aid agreements) under future conditions. In undertaking the analysis, a number of station models, apparatus deployment variations and staffing variation scenarios were evaluated. The most promising and practical of these options are documented in this report. The following variables, and combinations thereof, were tested:

- addition of fire stations; and
- relocation of staffed fire apparatus.

For ease of reference, the station staffing and vehicle assignments modeled are summarized in a tabular format included within each model figure.

6.9.3 Historic Call Locations

Figure 13 shows the type and location of all emergency calls responded to by IFRS from 2009 to 2011. The Town of Innisfil has a large geography, however, it is important to highlight that the emergency calls will occur in the populated areas of the Town. This is shown by the large clusters of calls in close vicinity to the existing four stations. A number of historic calls are also indicated in the northern tip of the Town, where a potential fifth station is being considered.

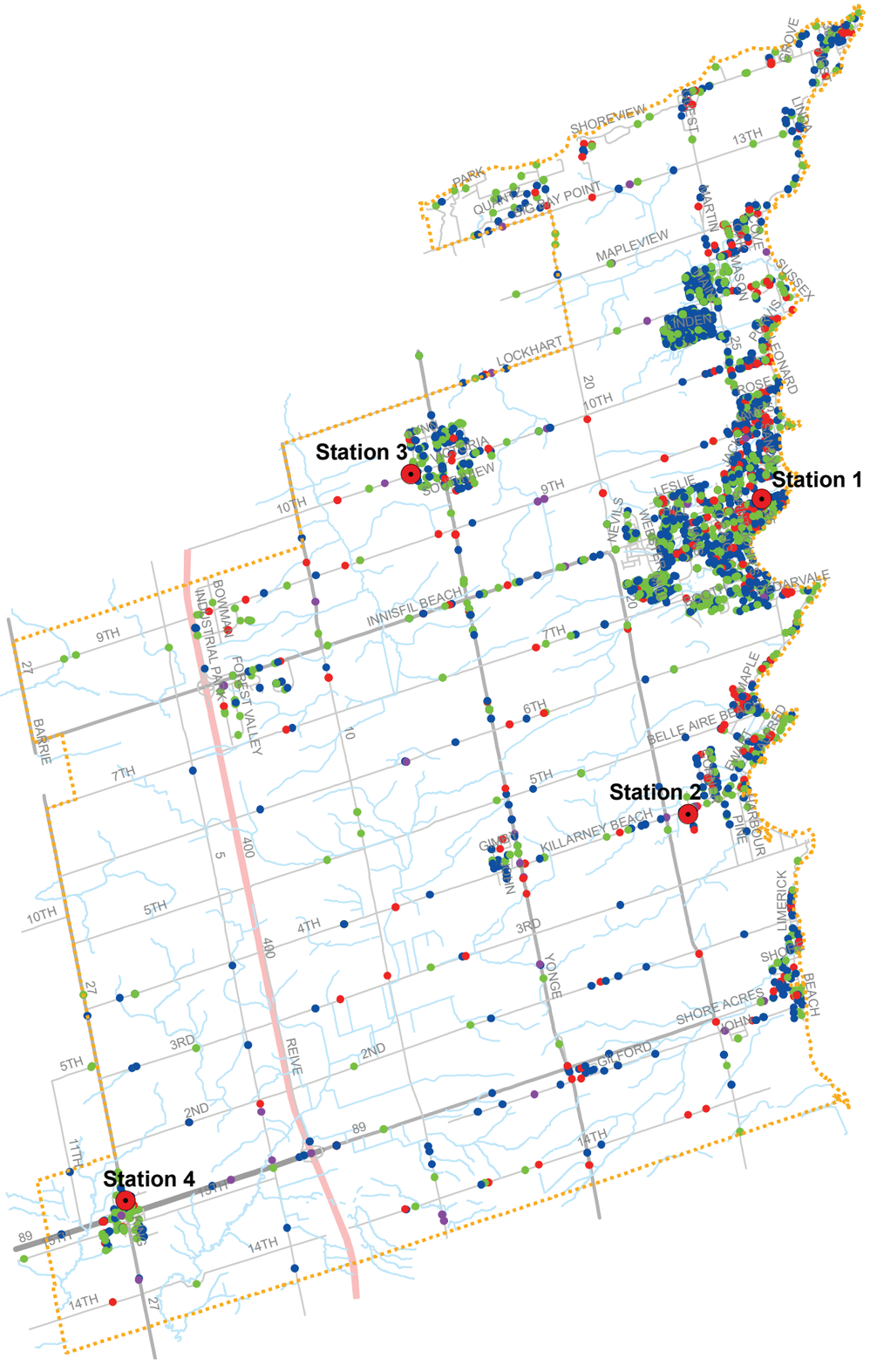


Figure 15: Historic Calls (2009-2011) Types and Locations

TOWN OF INNISFIL
FIRE MASTER PLAN

HISTORIC CALLS

Legend

- Fire Stations
- Municipal Boundary
- Expressway
- Highway
- Major Road
- Local Road

Historic Call Data (Type)

- Fire
- Medical
- Motor Vehicle
- Other

0 0.5 1 2 km

SCALE 1:XXX

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 04/18/12

6.9.4 Existing Initial Response

Innisfil Fire and Rescue currently utilizes dispatch protocols to assign the initial response resources based on historical call data and geography. In respect to travel times the fire and rescue service (including support through automatic aid agreements) is able to provide an initial response to 20% of the Town geographically within four minutes or less of travel time. Within eight minutes or less of travel time the fire and rescue service is able to provide an initial response to 66% of the municipality's geography. First response coverage is focused on responses to the built-up areas and urbanized settlements within the Town. The main deficiencies are in the rural area in the core of the municipality's geography and at the northern tip. This northern tip is an area of planned future development, which will need to be addressed with this strategic plan.

In the Community Risk Profile (***Appendix A - Figure 8***), the coverage of historic calls under the existing station configuration is assessed. A four minute travel time results in 25% of calls in low risk zone, 41% of calls in moderate risk zones and 67% of calls in high risk zones being covered. An eight minute travel time results in 65% of calls in low risk zone, 78% of calls in moderate risk zones and 100% of calls in high risk zones being covered. The percentage of historic calls (2009 to 2011) covered within four minutes of travel time under existing conditions is 52% (Summarized in ***Table 13*** below).

With respect to locations of the four existing IFRS Stations, the stations were built within settlement areas and the locations were not selected for optimal response coverage within the present-day geography of the Town of Innisfil. All four stations are located very close to the municipal boundary of the Town. Therefore, portions of the four minute and eight minute station response areas do not fall within the actual geography of the Town. Due to the locations of Station 1 and 2 being so close to the lake, approximately one half of Station 1's coverage area and approximately one quarter of Station 2's coverage area overlaps into Lake Simcoe. Similarly, the northern portion of Station 3's response area overlaps into City of Barrie lands. Station 4's response area overlaps into the Township of Essa, Town of New Tecumseth and the Town of Bradford West Gwillimbury. Future considerations for station locations should consider the populated areas, historic call locations, planned growth areas and location of Town boundaries in order to select optimal sites for station locations. In the long term, if Station 1 was planned for replacement, consideration for locating the station more centrally within the urbanized or populated area of Alcona should be considered and assessed through a station location study.

Figure 13 below presents the current *initial response* coverage areas of the Innisfil fire stations based on modelled travel times.

6.9.5 Current Depth of Response

Innisfil Fire and Rescue currently utilizes dispatch protocols to assign the depth of resources based on historical call data and geography. Due to the large geographic area and resulting travel times, depth of response coverage is a challenge for the IFRS.

Figure 14 presents the current *depth of response* coverage areas of the Innisfil fire stations. The figure shows that within an eight minute or less travel time the fire and rescue service is able to provide a depth of response of 14 firefighters to only 2% of the municipality's geography, 10 firefighters to 13% of the Town and eight firefighters to 14% of the municipality. Within an eight minute travel time, 64% of the municipality receives a response of four firefighters. 36% of the Town's geography cannot be reached within eight minutes of travel time. These are the areas shown in red, in the centre and at the northern tip of the municipality. The percentage of historic calls (2009 to 2011) covered within eight minutes of travel time under existing conditions is 83% (Summarized in ***Table 13*** below).

Figure 16: Current Initial Response Coverage Areas

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL FIRE MASTER PLAN

EXISTING FIRST RESPONSE

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

Travel Time	% Covered
<= 4 minutes	20%
<= 8 minutes	66%
> 8 minutes	34%

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 09/14/12

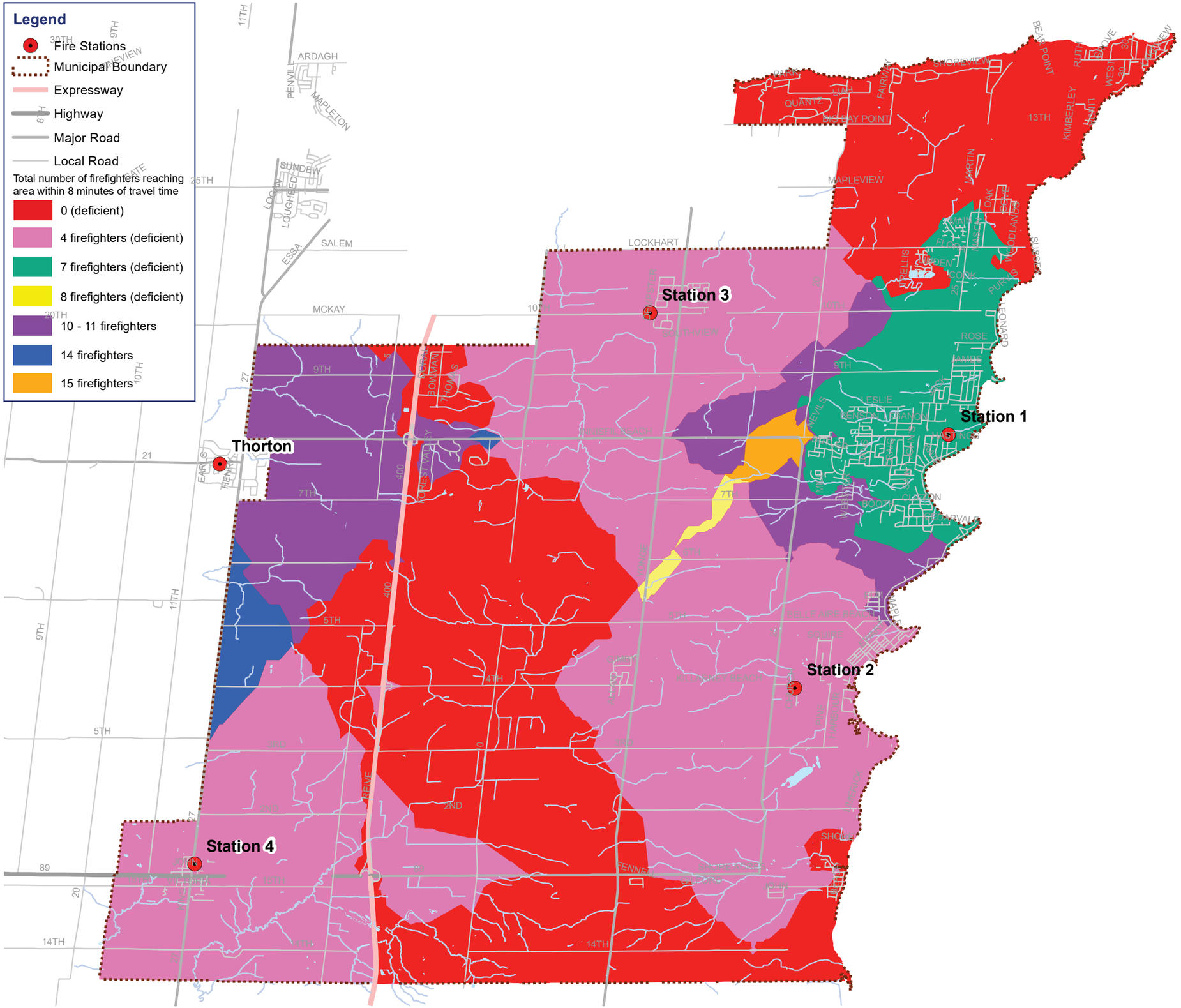


Figure 17: Current Depth of Response Coverage Areas

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL FIRE MASTER PLAN

EXISTING DEPTH OF RESPONSE

"NFPA 1710: Initial Full Alarm, minimum of 14 firefighters (15 if aerial is deployed) responding within 8 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Rescue Pumper - 4 Volunteer Firefighters
Pumper - 4 Volunteer Firefighters
Tanker - 2 Volunteer Firefighter

# of Firefighters	% Covered
0	36%
4	64%
7	21%
8	14%
10-11	13%
14	2%
15	1%

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 09/14/12

6.9.6 Relocate Station 2 Initial Response and Depth of Response

As discussed above, there is a need to rebuild and relocate Station 2. A relocated Station 2 was modelled at Town owned property on the northwest corner of the intersection of 20 Side Road and Third Line. The results of the initial response are shown in ***Figure 15.*** Relocated Station 2 results in an initial response to 22% (and improvement of 2% from the existing scenario) based on the Town's geographical area within a four minute or less travel time. Within an eight minute or less travel time the fire and rescue service is able to provide an initial response to 70% (and improvement of 4% from the existing scenario) of the municipality's geography. This new location, slightly further west than the existing Station 2, provides a four minute travel response that is completely within the boundary of the Town. However, this station location is farther removed from the cluster of historic calls within the most populated area of Lefroy. ***Table 12*** provides a comparison between the existing and proposed locations. This outlines that the historic calls that can be covered (Town-wide) within four minutes of travel time is 52% with Station 2 in the existing location, however, it drops to 48% with the relocation of Station 2. In an eight minute travel time, the existing station configuration results in 83% of calls being covered, however, the relocation of Station 2 improves the eight minute call coverage to 89%. The risk coverage with the existing station configuration and the relocated station configuration is very comparable, especially within four minutes of travel time. It is important to recognize the trade-offs associated with relocating the station outside of the populated area of the community. Turnout times of volunteer firefighters should also be considered when selecting a site for Station 2. In reality, the practical solution to selecting a site for Station 2 will reflect a number of factors beyond just emergency response, such as land availability, costs, approvals, site servicing, partnership opportunities, environmental and social impacts, etc.

Depth of response results associated with the relocation of Station 2 is shown in ***Figure 16***. Within an eight minute or less travel time this scenario results in a depth of response of 14 firefighters to 2% and 10 firefighters to 13% of the Town's geography, same as the existing scenario. As some of the eight minute response area of relocated Station 2 no longer overlaps with Station 1's response area, the eight firefighters coverage drops by 1% to 13%. However, within an eight minute travel time, 68% of the municipality receives a response of four firefighters, which is a 4% improvement from existing conditions. Therefore, in this scenario 32% of the Town's geography cannot be reached within eight minutes of travel time, shown in red in ***Figure 16***.

It is our understanding that the Town of Innisfil has recently partnered with Innisfil Hydro to purchase land on the northwest corner of 5th Line and 20th Side Road for the relocation of Station 2. This would relocate the station two blocks north of the modelled site and 1.8 km north of the existing Station 2 location. There are a number of factors that must be considered when determining the future location of a fire station. This location was an appropriate size for a new station, has the ability to bring in utilities and has an appropriate travel distance for the majority of the current compliment of volunteer firefighters. The site also provides easy access to and from the station.

Table 12: Station 2 Location Comparison

Scenario	First Response % Coverage (Geography)			Historical Call Locations % Coverage (Call Cove rage)			Risk Zones (Geography) % Coverage		
Time (Minutes)	**<= 4**	**<= 8**	**> 8**	**<= 4**	**<= 8**	**> 8**	**<= 4**	**<= 8**	**> 8**
Existing 4 Station Model with Thorton Automatic Aid	20%	66%	34%	52%	83%	17%	Low – 18% Mod – 26% High – 62%	Low – 65% Mod – 67% High – 91%	Low – 35% Mod – 33% High – 9%
Four Station Model (with Thorton Automatic Aid) with Relocated Station 2 at 20 Side Road and 3rd Line	22%	70%	30%	48%	89%	11%	Low – 20% Mod – 26% High – 62%	Low – 69% Mod – 71% High – 95%	Low – 31% Mod – 29% High – 5%

Figure 18: Relocation Station 2 Initial 5HVSRQVH

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL
FIRE MASTER PLAN

EXISTING FIRST RESPONSE
RELOCATE STATION 2

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

Travel Time	% Covered
<= 4 minutes	22%
<= 8 minutes	70%
> 8 minutes	30%

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 09/14/12

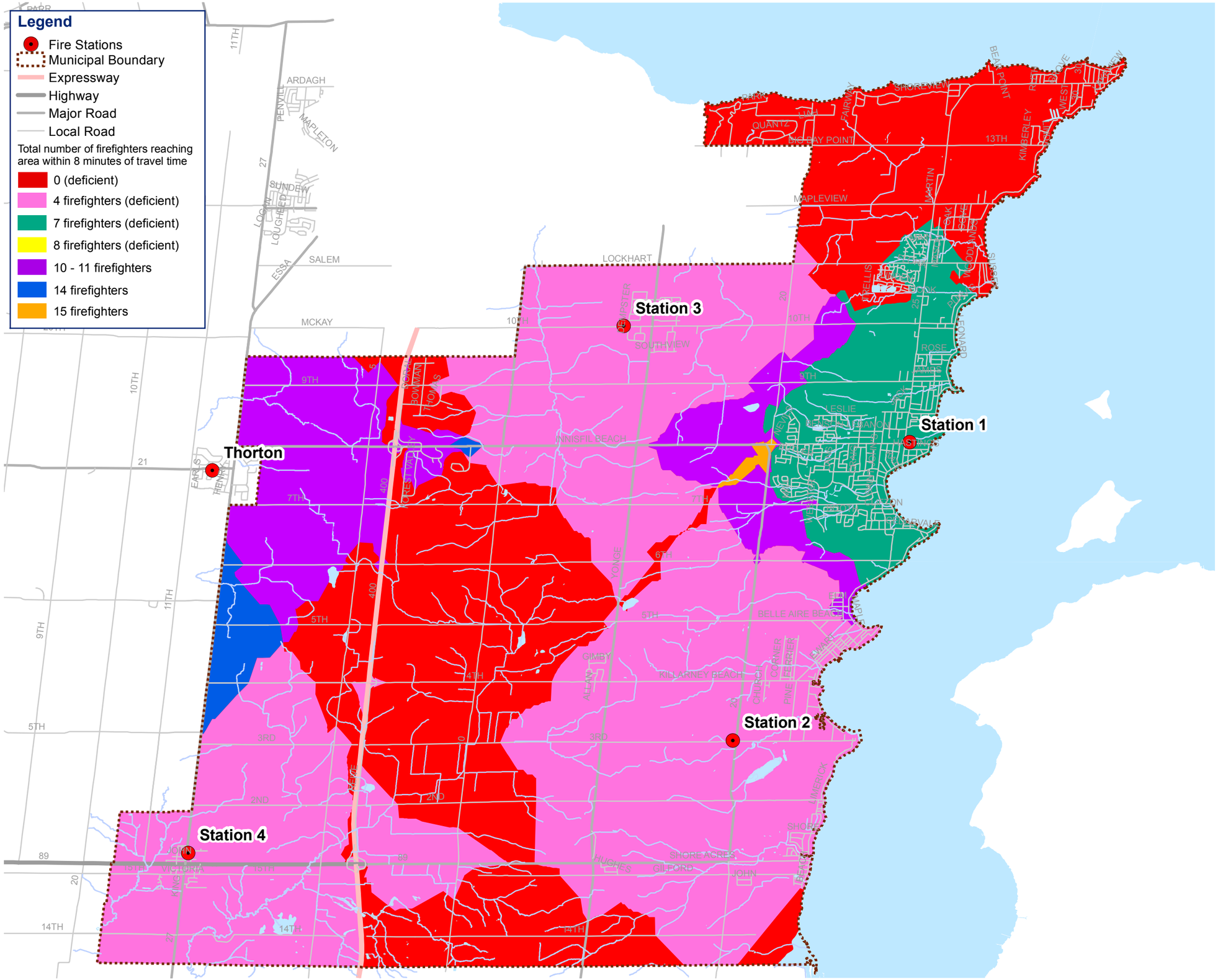


Figure 19: Relocate Station 2 Depth of 5HVSRQVH

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL FIRE MASTER PLAN

EXISTING DEPTH OF RESPONSE RELOCATE STATION 2

"NFPA 1710: Initial Full Alarm, minimum of 14 firefighters (15 if aerial is deployed) responding within 8 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper (or Rescue) - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Rescue Pumper - 4 Volunteer Firefighters
Pumper - 4 Volunteer Firefighters

# of Firefighters	% Covered
0	32%
4	68%
7	20%
8	13%
10-11	13%
14	2%
15	0%

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 01/14/13

6.9.7 Future Optimal Initial Response and Depth of Response

This scenario evaluates the emergency response coverage that would be expected under future conditions with the addition of Station 5 in the Big Bay Point area (northern section of the Town) and relocating Station 2. An additional complement of staff would be required to operate the new station. For this scenario, it is assumed that the new station is operated by a volunteer complement.

The initial response for this scenario, with four firefighters arriving on-scene within four minutes of travel time is anticipated to be 26% of the future coverage area. This is an improvement of 6% from the existing conditions. The initial response within eight minutes of travel time increases to 80%, which is an improvement of 14% from existing conditions. Results of the initial response assessment for this scenario are shown in ***Figure 17***. As shown in ***Table 13***, this scenario results in 52% of historic calls being covered within four minutes of travel time.

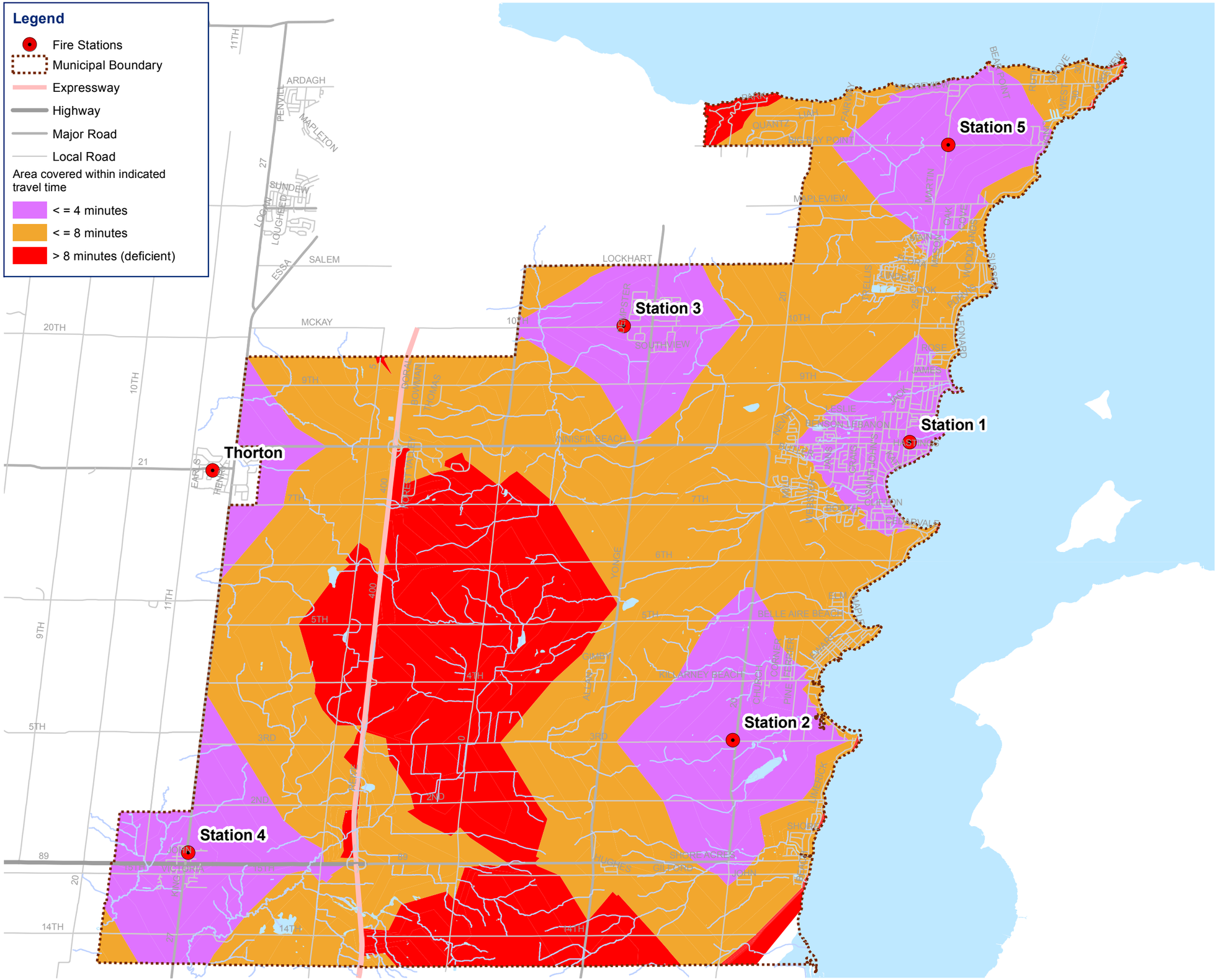
For the depth of response measure, this scenario results in 2% coverage measuring where 14 firefighters can respond within eight minutes of travel time for the NFPA 1710 performance measure target, the same as existing conditions. Results of the depth of response assessment are shown in ***Figure 18***. As shown in ***Table 13***, this scenario results in 96% of historic calls being covered within eight minutes of travel time. That is an improvement of 13% from existing conditions.

Table 13 provides a summary and comparison of the station configurations assessed in the study.

This station and staffing scenario reflects an improvement in risk coverage areas for the future conditions within the Town, as discussed in detail in ***Appendix A,*** and as summarized in ***Table 13.*** The area in the centre of the Town remains uncovered under first and depth of response (shown as red areas in ***Figures 17*** and ***18***). Under the existing development conditions, this area is not heavily populated. It is recommended that as a rural area, the first two lines of defence be applied, as opposed to increasing suppression services to areas where call volumes are low.

Table 13: Summary of Analytical Results

Scenario	First Response % Coverage (Geography)			Depth Response % Coverage (Geography Coverage)							Historical Call Location % Coverage		
	<= 4	<= 8	> 8	0	4	7	8	10-11	14	15	<= 4	<= 8	> 8
Four Existing Stations and Thorton Automatic Aid Coverage	20%	66%	34%	36%	64%	21%	14%	13%	2%	1%	52%	83%	17%
Four Stations and Thorton Automatic Aid, Relocate Station 2	22%	70%	30%	32%	68%	20%	13%	13%	2%	0%	48%	89%	11%
Future Optimal: Five Station Model, Relocate Station 2	26%	80%	20%	23%	77%	20%	14%	14%	2%	0%	52%	96%	4%
Theoretical Future 6 Station	30%	92%	8%	n/a							52%	97%	3%



)LJXUH 20: Future Optimal Initial Response

Town of Innisfil
Infinite Opportunities

TOWN OF INNISFIL FIRE MASTER PLAN

FUTURE FIRST RESPONSE RELOCATE STATION 2 AND ADD STATION 5

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 5
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

Travel Time	% Covered
<= 4 minutes	26%
<= 8 minutes	80%
> 8 minutes	20%

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 09/14/12

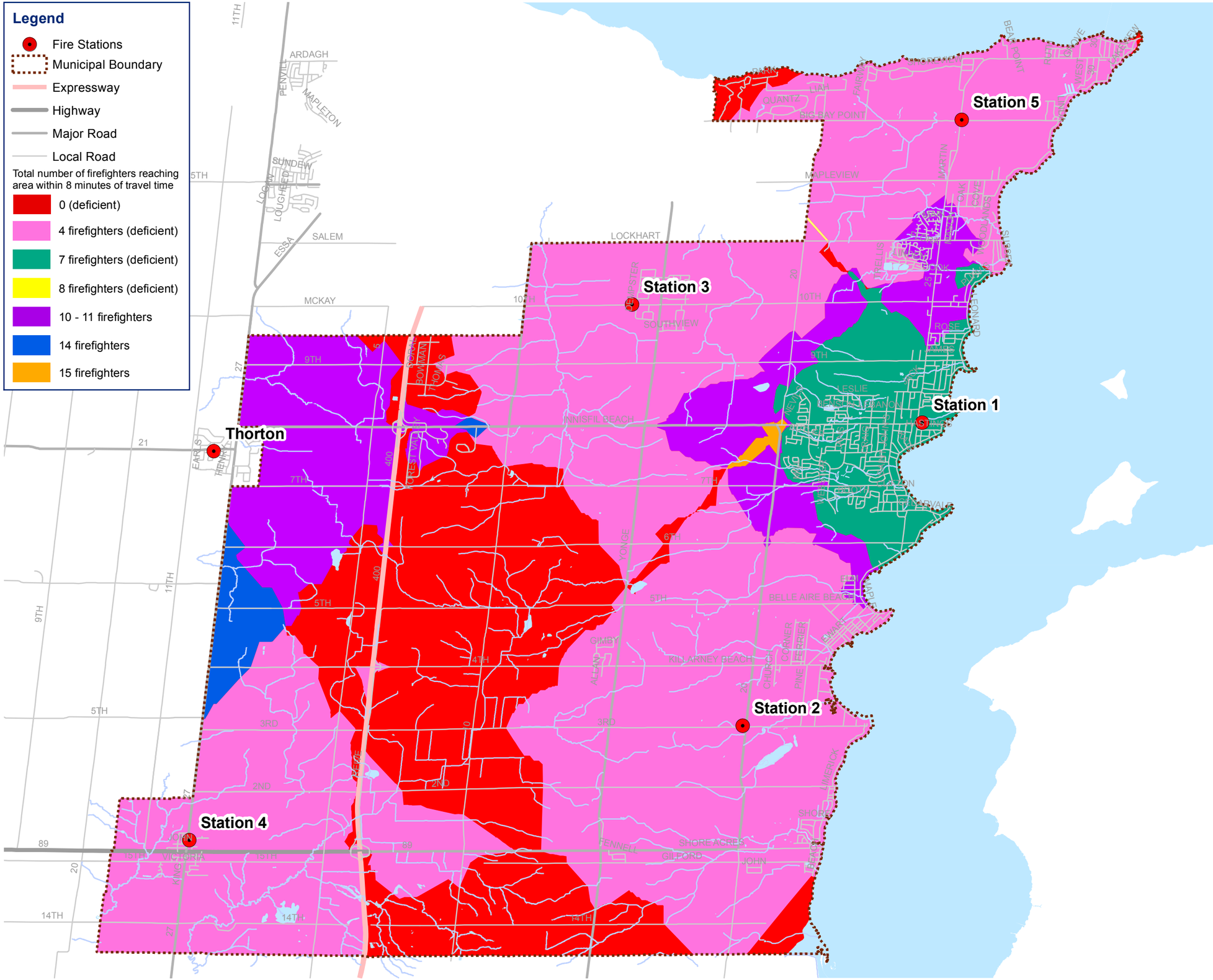


Figure 21: Future Optimal Depth of Response

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL FIRE MASTER PLAN

FUTURE DEPTH OF RESPONSE RELOCATE STATION 2 AND ADD STATION 5

"NFPA 1710: Initial Full Alarm, minimum of 14 firefighters (15 if aerial is deployed) responding within 8 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper (or Rescue) - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 5
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Rescue Pumper - 4 Volunteer Firefighters
Pumper - 4 Volunteer Firefighters

# of Firefighters	% Covered
0	23%
4	77%
7	20%
8	14%
10-11	14%
14	2%
15	0%

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 09/14/12

6.9.8 Potential Future 6th Station Initial Response Assessment

In order to address the response deficiencies in the centre of the Town's geography for consideration of long-term growth potential, a scenario was modelled to test the addition of a 6th station. There is no existing need for a 6th station, as the call locations and volumes do not warrant it. If growth and development was planned to occur in the centre of the Town, where emergency response is currently a challenge due to long travel distances and times from all existing and planned stations, then adding a fire station to serve the area should be considered. It will be important to monitor this growth and potential need for service.

Where there is a need for a station, based on calls and populated areas, the location is based on initial response. Therefore, only the initial response was modelled for this potential future station. The results are shown in ***Figure 19***.

The addition of the 6thstation improves initial response coverage to 30% (up 10 % from existing and 4% from the five station scenario). Eight minute initial response coverage increases to 92%, which is 26% higher than existing conditions and 12% higher than the five station model). A six station model would provide good overall geographic coverage of the Town of Innisfil within an eight minute travel time. However, based on call volume, this is not required under existing conditions or within the planning horizon assessed.

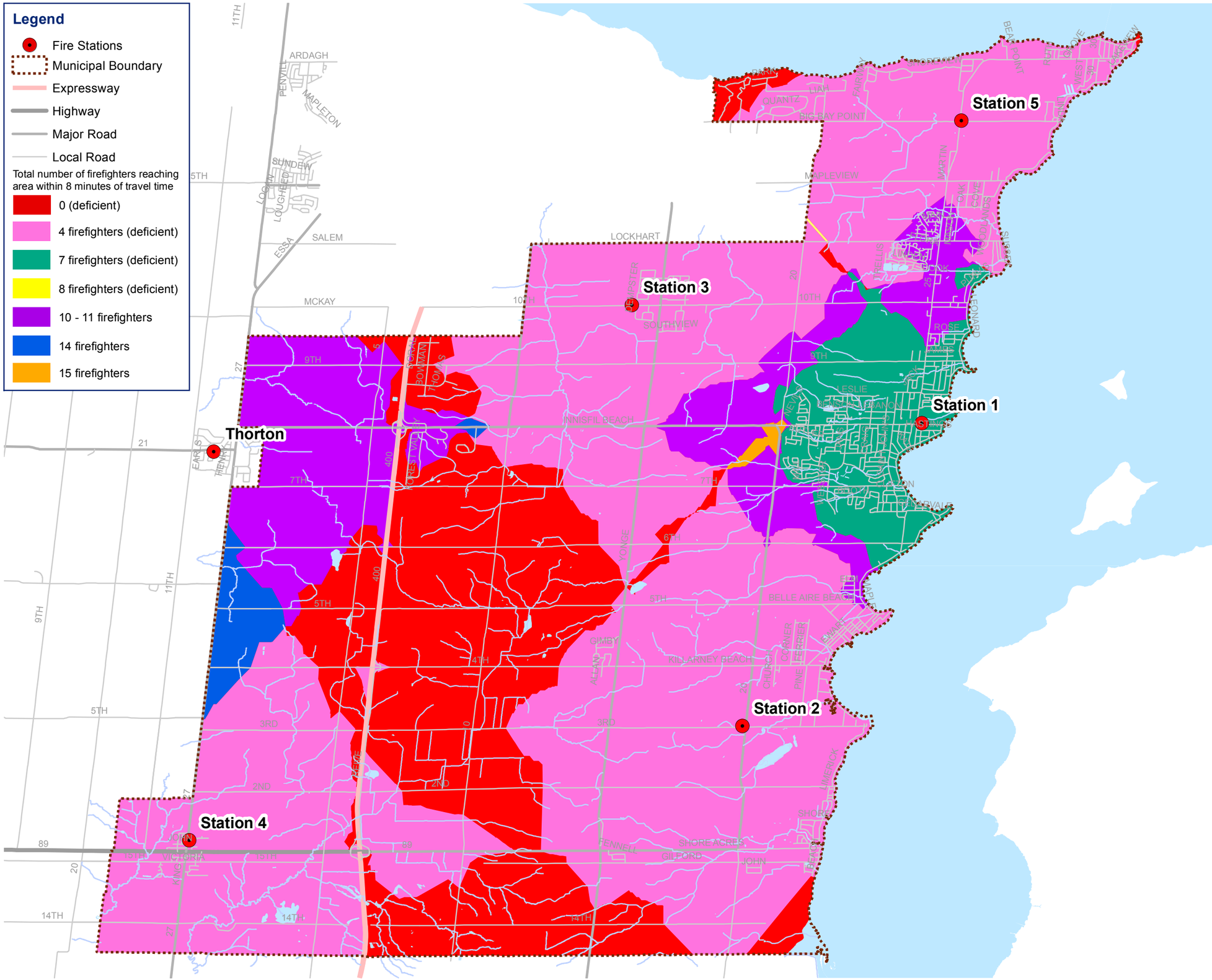


Figure 22: Future Potential 6th Station Initial Response

TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL FIRE MASTER PLAN

FUTURE DEPTH OF RESPONSE RELOCATE STATION 2 AND ADD STATION 5

"NFPA 1710: Initial Full Alarm, minimum of 14 firefighters (15 if aerial is deployed) responding within 8 minutes travel time to 90% of incidents"

STATIONS & STAFFING

STATION 1
Rescue Pumper - 2 Full Time Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION 2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 4
Pumper (or Rescue) - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION 5
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

THORTON STATION
Rescue Pumper - 4 Volunteer Firefighters
Pumper - 4 Volunteer Firefighters

# of Firefighters	% Covered
0	23%
4	77%
7	20%
8	14%
10-11	14%
14	2%
15	0%

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

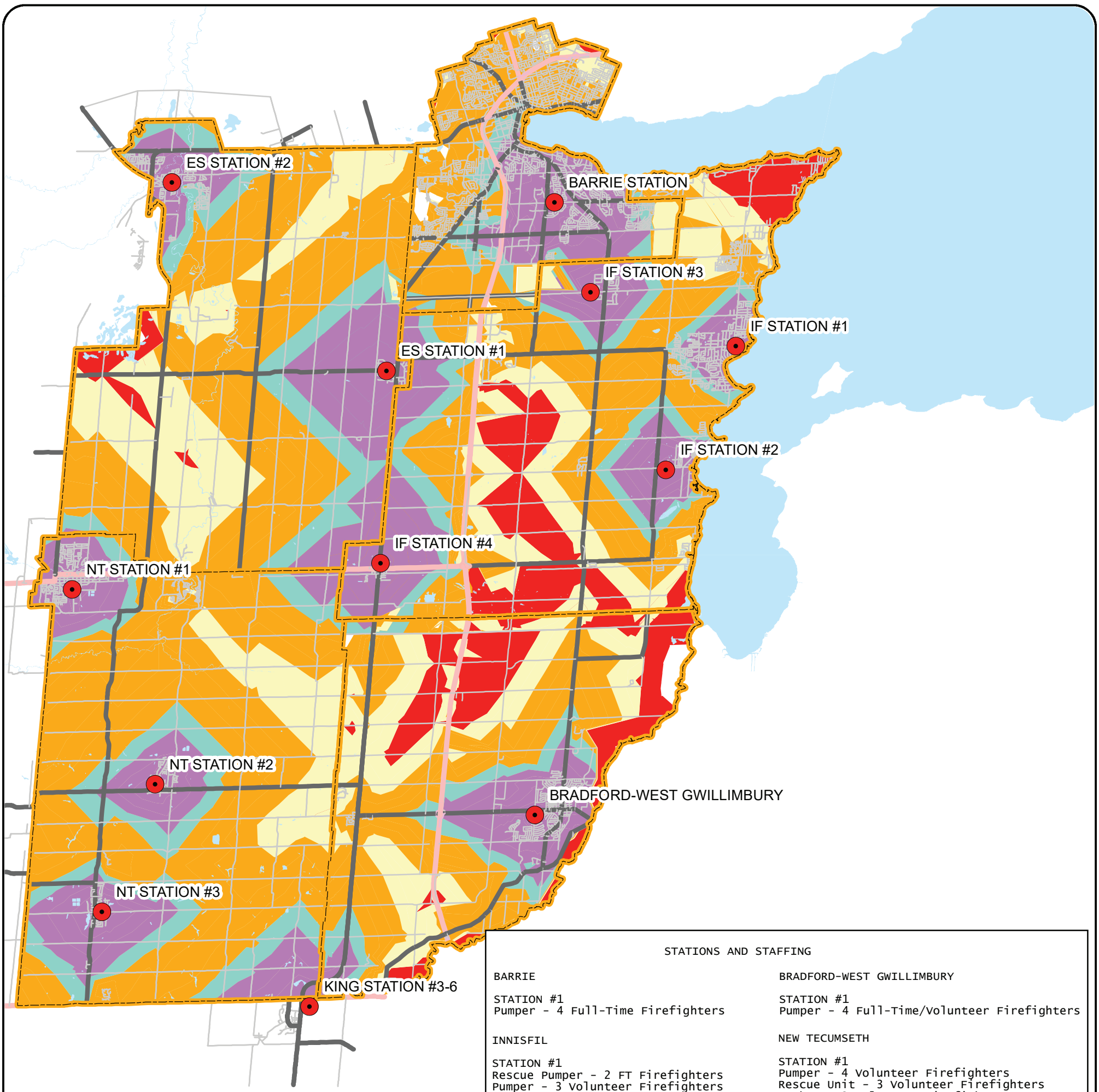
FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 09/14/12

6.9.9 Automatic Aid Considerations – Initial Response and Depth of Response

Consideration was given to the potential emergency response coverage that could be achieved through automatic aid agreements with the surrounding municipalities of the Township of Essa, Town of New Tecumseth, Town of Bradford West Gwillimbury, Township of King and City of Barrie. The travel times for an initial response for all of these municipalities combined is shown in ***Figure 20***. The depth of response staffing that could be achieved through automatic aid agreements between all of these municipalities is included in ***Figure 21***. The Town of Innisfil should ensure that it has considered and pursued all opportunities to optimize emergency response coverage within the Town through the use of automatic aid agreements. It is recommended that IFRS arrange discussions with the fire service management teams of the surrounding municipalities.



STATIONS AND STAFFING

BARRIE

STATION #1
Pumper - 4 Full-Time Firefighters

INNISFIL

STATION #1
Rescue Pumper - 2 FT Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

STATION #3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighters

STATION #4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

ESSA

STATION #1
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

BRADFORD-WEST GWILLIMBURY

STATION #1
Pumper - 4 Full-Time/Volunteer Firefighters

NEW TECUMSETH

STATION #1
Pumper - 4 Volunteer Firefighters
Rescue Unit - 3 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #2
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighers
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #3
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

KING TOWNSHIP

STATION #36
Pump - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Aerial - 1 Volunteer Firefighter
Tanker - 2 Volunteer Firefighters

AUTOMATIC AID AGREEMENTS

ESSA
INNISFIL
NEW TECUMSETH
BARRIE
BRADFORD-WEST GWILLIMBURY

Legend

Fire Hall
Highway
Major Road
Local Road
Municipal Boundary

Area covered within indicated travel time

<= 4 minutes
<= 5 minutes
<= 8 minutes
<= 10 minutes
> 10 minutes

Figure 23: Automatic Aid Considerations
Initial Response

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

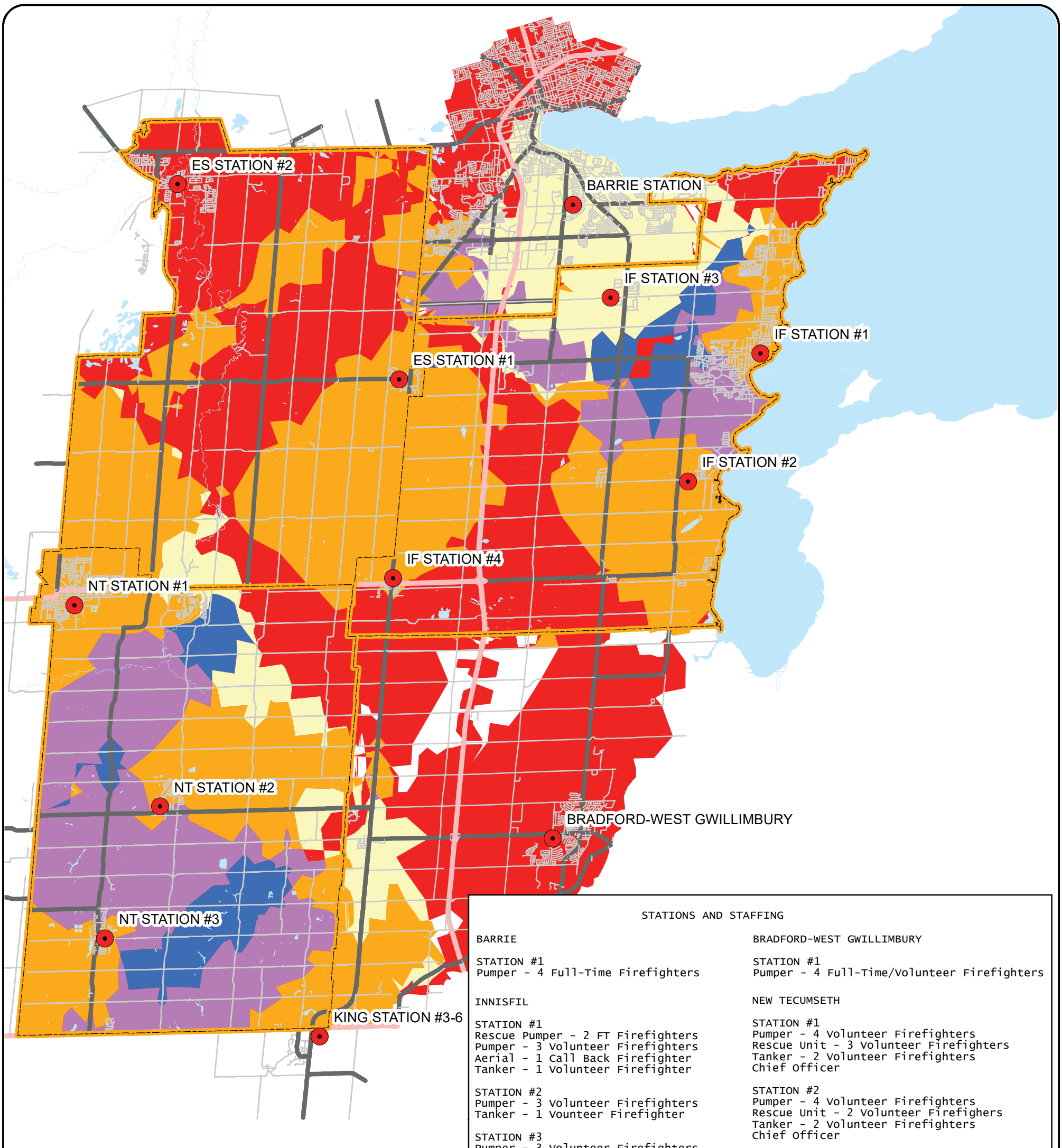
MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126627 20\Design_GIS\MXDs

0 1 2 4 km

N W E S

PROJECT: 12-6627 STATUS: DRAFT DATE: 12/19/12



STATIONS AND STAFFING

BARRIE

STATION #1
Pumper - 4 Full-Time Firefighters

INNISFIL

STATION #1
Rescue Pumper - 2 FT Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

STATION #3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighters

STATION #4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

ESSA

STATION #1
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

BRADFORD-WEST GWILLIMBURY

STATION #1
Pumper - 4 Full-Time/Volunteer Firefighters

NEW TECUMSETH

STATION #1
Pumper - 4 Volunteer Firefighters
Rescue Unit - 3 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #2
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighers
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #3
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

KING TOWNSHIP

STATION #36
Pump - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Aerial - 1 Volunteer Firefighter
Tanker - 2 Volunteer Firefighters

AUTOMATIC AID AGREEMENTS

ESSA
INNISFIL
NEW TECUMSETH
BARRIE
BRADFORD-WEST GWILLIMBURY

Legend

Fire Hall
Highway
Major Road
Local Road
Municipal Boundary

Total number of firefighters reaching area within 10 minutes of travel time

<= 4 Firefighters
5 - 10 Firefighters
11 - 14 Firefighters
15 - 20 Firefighters
> 20 Firefighters

Figure 24: Automatic Aid Considerations
Depth of Response

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126627 20\Design_GIS\MXDs

0 1 2 4 km

N W E S

PROJECT: 12-6627 STATUS: DRAFT DATE: 12/19/12

6.10 Future Staffing Considerations

As shown above, consistently achieving the recommended initial response deployment of four firefighters is a significant challenge for the IFRS. This is partly due to the minimum staffing of two full-time firefighters at Station 1 to staff Pumper-Rescue 1, and the inability to consistently deploy four volunteer firefighters on the initial responding apparatus.

Normal business hours (8 am to 6 pm Monday through Friday) are a time period when achieving the recommended initial response is an even greater challenge due to the availability of volunteer firefighters.

Achieving the recommended depth of response deployment of 14 firefighters is also a challenge for the IFRS. In part this is related to the large geographic coverage area of the municipality and extended travel times to respond to the scene. It is also related to the number of volunteer firefighters that are available to respond at any given time. The deployment of the two full-time firefighters from Station 1 relies on the consistent response of 12 volunteer firefighters from the responding stations to achieve the recommended depth of response target.

Based on the analysis there are several options that would improve the initial response and depth of response capabilities of the IFRS including:

Option #1 – Increased Complement of Volunteer Firefighters

The current complement of 24 volunteer firefighters per station is consistent with the historical number of volunteer firefighters that municipalities across the province have used for many years. More recently the demands of work/life balance and competing priorities on the volunteer firefighters have caused municipalities to increase their complement of volunteer firefighters to between 30 to 40 volunteer firefighters per station. The results have shown an increase in the number of volunteer firefighters available, and with targeted recruitment practices some increase in the number of volunteer firefighters available during normal business hours.

The IFRS actively recruits volunteer firefighters to sustain the current complement of 24 volunteer firefighters per station. Developing a new comprehensive volunteer recruitment plan that includes targeting members of the community who are more likely to be available during normal business hours, and increasing the approved complement of volunteer firefighters for each station to 30 is an option that may provide improvements to both the initial response and depth of response capabilities of the IFRS.

Option #2 – Optimization of Scheduled Volunteer Firefighters

Scheduling two volunteer firefighters to be available during normal business hours Monday through Friday at Station 1 to supplement the current complement of full-time staff would provide the added resources required to staff Pumper-Rescue 1 to achieve the recommended initial response of four firefighters. This option would provide an assured initial response of four firefighters for response across the entire community during normal business hours.

This option would require discussion with the Association representing the full-time firefighters in order for successful implementation. As an interim strategy this option may provide some flexibility in assessing the results of other identified staffing options and the impacts of future growth and station locations.

Option #3 – Increased Number of Full-time Firefighters – Normal Business Hour Coverage

To provide an assured initial response of four full-time firefighters during normal business hours Monday through Friday the IFRS would need to hire a minimum of two additional full-time firefighters. This would also require a flexible work schedule for the additional full-time firefighters to accommodate the scheduling required for coverage from Monday through Friday from 8 am to 6 pm.

This option would provide an assured initial response of four full-time firefighters for response across the entire community during normal business hours.

Option #4 – Increased Number of Full-time Firefighters – 24 hours a day, seven days per week Initial Response

Providing an assured initial response of four full-time firefighters at all times of the day for response across the entire community would require hiring an additional 12 full-time firefighters. This would accommodate for leave (e.g. vacation, sickness, injuries, etc.) and assure a minimum response of four full-time firefighters at all times.

This option would achieve the recommended initial response deployment; however it continues to rely on the deployment of volunteer firefighters to achieve the recommended minimum depth of response deployment of 14 firefighters.

Option #5 – Optimization of Resources

This FMP includes a recommendation for a full-time Training Officer. This is a position that in our view is warranted by the current training needs of the department. Subject to consideration of the options identified above, the training needs of the department will be further increased as a result of an increased complement of either volunteer and/or full-time firefighters.

Optimizing the use of the Training Officer by adding the additional role of emergency response should be considered as either an interim strategy to increase the initial response and/or as an ongoing strategy to provide additional resources at an emergency scene.

Based on our analysis, the consideration of options to increase the initial response deployment should be a priority for the IFRS including:

- approval of Option #1 to increased the complement of volunteer firefighters at each station from 25 to 30;
- approval of Option #2 to optimization the use of scheduled volunteer firefighters to support a minimum staffing of four firefighters on duty during normal business hours Monday through Friday at Station #1; and
- approval of Option #5 to optimize the use of the recommended Training Officers position to support the initial response deployment.

In our view these options should be considered in combination with the implementation of an enhanced tracking process to monitor the arrival times and number of firefighters arriving on scene. This will provide the IFRS and Council with a process for ongoing evaluation of the initial response and depth of response capabilities of the IFRS. Based on the results of the ongoing evaluation further consideration of the remaining options presented may be considered. The estimated costs associated with these options are included in ***Section 10***.

6.11 Fire Suppression Division Summary of Recommendations

Fire suppression is the third "line of defence" within an overall community fire safety plan. Effective and efficient fire suppression capability is a critical component in ultimately protecting life safety and reducing property loss as a result of fire within a community.

The following recommendations relate to Innisfil Fire and Rescue Service Division of Fire Suppression:

- *We recommend that the Town of Innisfil establish a performance measure target for initial response by the Innisfil Fire and Rescue Services of deploying four firefighters to all confirmed, reported or potential structure fires (including alarm activations).*
- *We recommend that the Town of Innisfil establish a performance measure target for depth of response by the Innisfil Fire and Rescue Services of deploying fourteen firefighters to all confirmed, reported or potential structure fires (including alarm activations, which should be responded to as a reported fire).*
- *We recommend approval of Option #1 – Increased Complement of Volunteer Firefighters, to increase the complement of volunteer firefighters at each station from 24 to 30. This is important for the depth of response coverage.*
- *We recommend approval of Option #2 – Optimization of Scheduled Volunteer Firefighters, to staff Pumper-Rescue 1 to a level of four firefighters during normal business hours Monday through Friday to provide an assured initial response deployment of four fire firefighters available for the response across the entire community.*
- *We recommend approval of Option #5 – Optimization of Resources, optimizing the use of the Training Officer by adding the additional role of emergency response as either an interim strategy to increase the initial response and/or as an ongoing strategy to provide additional resources at an emergency scene.*
- *Subject to the ongoing monitoring of the recommended performance measure target we recommend that the IFRS assess the travel time and performance percentage objectives identified within the Fire Suppression Performance Targets (**Appendix B**) in developing further enhanced performance measures target for depth of response.*
- *We recommend the replacement of Station 2 and Station 4 due to the age, condition, size and facilities of the existing buildings.*
- *We recommend that a new Station 2 is located near the highest concentration of existing call locations for the existing Station 2, with consideration given to the local future growth areas and the location of the volunteers responding to the station in order to optimize turnout times and response times.*
- *As IFRS plans and develops new facilities (e.g. stations), opportunities for shared facilities, such as EMS (as in existing Station 3) should be investigated or considered in light of the recommendation to adjust the category of medical responses.*
- *Coinciding with the planned development, including Friday Harbour, at Big Bay Point we recommend the addition of a fifth fire station in the vicinity of the intersection of 13th Line and 25 Side Road, in order to serve the projected population and improve response times generally in the northeast part of the community.*

- *Utilizing the Community Fire Risk Assessment we recommend that emergency response protocols for occupancies identified as having high or extreme risk be developed to automatically dispatch additional fire suppression resources from the IFRS or alternatively developing Fire Protection Agreements with neighbouring communities where necessary.*
- *It is recommended that IFRS arrange discussions with the fire service management teams of the surrounding municipalities. Beyond improving emergency response within Innisfil, providing automatic aid outside of Innisfil could potentially generate revenue for the Town.*
- *Based on our analysis we are recommending that the Town of Innisfil consider increasing the station complement of volunteers from the current 24 to 30. This would be a net increase of four volunteer captains and 20 volunteer firefighters to staff the existing stations.*
- *In order to staff the proposed new Station 5 we recommend a complement of five volunteer captains and 25 volunteer firefighters, for a total complement of 30 volunteer suppression staff.*
- *The Town of Innisfil should continue proactive volunteer firefighter recruitment strategies, and specifically targeting candidates that are available during normal business hours Monday through Friday.*
- *It is recommended that recruitment and retention statistics continue to be tracked and monitored by the department.*
- *It is recommended that IFRS implement a system to separately track turnout time and travel time. These statistics should be reviewed and compared to industry performance measures on a regular basis, for example, as a component of preparing the IFRS annual report.*
- *It is recommended that all volunteer firefighters respond to their Station and travel to emergency scenes on IFRS apparatus or vehicles as per best practices regarding health and safety.*
- *It is recommended that IFRS investigate resource management tools and technology to provide information regarding volunteers' schedules, availability, location and response status in real-time, with real-time updates directly to IFRS fire stations.*
- *IFRS should attain recertification of Tanker Shuttle Accreditation prior to June 2013.*

7.0 TRAINING

The Innisfil Fire and Rescue Service (IFRS) currently provides ongoing training and retraining of all aspects of firefighting including first aid, CPR and training new recruits.

Based on our experience and knowledge of the Ontario fire service, firefighter training is an area 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 strategic priority for municipalities in their roles as employers and fire service leaders as supervisors. The Ministry of Labour has committed significant resources to audit and support this strategic priority.

Through consultation with the volunteer and full-time firefighters, the Deputy Fire Chief and the Fire Chief in preparing this FMP it was evident that there is unanimous support and desire to enhance training programs within the IFRS. Under the direction of the new management team, many improvements and initiatives have been put into action to improve department training since 2011. Continuously improving the division, while the IFRS grows, develops and expands will require the assignment of sufficient resources.

7.1 Staffing

The Training Division is currently managed by the Deputy Chief. Where required, the Fire Chief provides support to the Training Division. The full-time Captains, full-time Firefighters and Volunteer Captains provide support to deliver training, as requested. All Officers in IFRS are Trainer Facilitators. The Volunteer Captains facilitate and deliver the training to the volunteer suppression staff.

The establishing by-law listed the following responsibilities related to department training:

- Conduct training for all personnel of the Service in fire administration, fire prevention and suppression;
- Administer training programs in the stations;
- Prepare and conduct examinations of full-time and volunteer members of IFRS, as required by the Fire Chief;
- Prepare an annual report and budget for the Training Division to be submitted to the Fire Chief; and
- Perform other duties as assigned.

The by-law indicates that the Fire Chief may designate a Training Officer to carry-out the above listed duties. Currently, these duties are the responsibility of the Deputy Fire Chief, who oversees the Training Division. The administration and management of training records for all members of the Innisfil Fire Rescue Service is a core function of the Training Division.

The Deputy Chief is currently dedicating a large amount of time and effort to the Training Division. The role of the Deputy Chief should be to oversee and supervise the Training Division, as opposed to operating it. With all of the other duties required of the Deputy Chief, he does not have the capacity to develop lesson plans and expand training programs. In order to further enhance the Training Division and to reduce the workload burden on the Deputy Fire Chief, a Training Officer position is recommended. This will also improve the consistency and quality of training throughout the department. A Training Officer position would also add much needed capacity to the division in order to develop and expand current training and support the on-going delivery of training to the IFRS as it expands to meet the needs of the growing community. It is our understanding that Council has approved a Training Officer position and is currently in the process of filling the role.

7.2 Annual Training Plan

In partnership with the Ontario Association of Fire Chiefs, the Office of the Fire Marshal, Ontario has developed training standards for firefighters and company officers. Each of these standards has an extensive curriculum including the theoretical and practical components of the primary functions and roles and responsibilities of these positions.

Addressing an employer's responsibilities as defined by the *Occupational Health and Safety Act* and specifically the *Section 21 Guidance Notes for Firefighters* is another mandatory component of a comprehensive annual training program.

In our view, in addition to responding to the relevant standards, curriculum and health and safety requirements, a comprehensive annual training program should 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 best practices and legislative requirements;
- Oversight of program objectives and records management; and
- Ongoing assessment of program delivery for efficiency and effectiveness.

Developing and sustaining an annual training program that includes all of the core functions and addresses the health and safety responsibilities of the municipality is consistent with the strategic priority that fire services across Ontario are initiating. Implementing this strategy should be considered a major priority for IFRS. This will require additional resources dedicated to the Training Division, such as a Training Officer Position.

7.3 Training Programs

7.3.1 Full Time Firefighter Training

The Deputy Chief issues mandatory training for all full time staff. The department follows the OFM curriculum as the basis for training program. Full time firefighter training is conducted by on-shift full time Captains (crew captains). This ensures all crews are adequately trained for normal day to day suppression topics. It is the responsibility of the crew captains to ensure all members of their crews complete the required training sessions.

Full time firefighters are encouraged to attend the Ontario Fire College and are permitted to take up to three courses per calendar year. The course must not result in overtime costs, but full time personnel receive one day off in lieu for each day of course attendance.

7.3.2 Volunteer Firefighter Training

Volunteer firefighter training follows the OFM curriculum. Prior to 2012 volunteer staff were not asked or encouraged to complete the challenge exams. IFRS is now offering internally hosted challenge exams and will be implementing a wage scale in order to encourage more staff to become certified firefighters.

The current training is coordinated through all of the full time and volunteer captains. The full time captains provide the content (videos, lesson plans, etc.) while the volunteer captains deliver and facilitate the actual training. Volunteer training takes place at each of the four stations every two weeks. Additionally, two optional hands on practical training days were recently added each month (every second Friday). All volunteers are required to attend a minimum of 70% of the training sessions. There has been a significant turnover in the volunteer complements since enforcing the training attendance minimums. It is expected that this will induce a cultural change and as the enforced participation becomes the accepted department practice, turnover will return to a normal (e.g. 10-15%) annual rate.

As with full time staff, volunteers are encouraged to attend the Ontario Fire Collage and are permitted to take up to three courses per calendar year.

7.3.3 New Recruit Training

Prior to July 2011, there was no recruit training program in place for both volunteer and full-time firefighters. Volunteers were placed under probation and were not permitted to attend structural fire calls until the probationary period ended. They would attend regular training sessions with others in the department. There was very little training geared to their level of experience as new recruits.

As of 2012, new recruits must now complete a basic recruit class before responding to any emergency calls or attending the regular training sessions. This training is coordinated by the Chief and the Deputy Chief and delivered by career captains and career firefighters as well as the station volunteer captains.

There is a degree of inconsistency that results from the training being delivered as it depends on the knowledge of the volunteers who participate in delivering the training on each subject.

Once assigned to their respective stations, probationary firefighters are not permitted to respond to any structural fire calls until they pass a written exam to end the probationary period. This exam cannot be attempted until all station captains agree that the firefighter is fit to come off of probation.

7.3.4 Prevention and Education Training

Full time and volunteer suppression staff receive training on delivering the smoke alarm program and how to operate the fire safety trailer. Full time firefighters are also trained on the fire protection equipment in newly constructed buildings, as a fire prevention initiative. This training will occur prior to occupancy of the new buildings. Follow up training occurs if required. Building owners and firefighters have found it very beneficial, as a pre-planning approach.

7.4 Speciality Training Programs

In addition to basic firefighting training the department must also consider the training needs associated with specialized services. Specialized services are the types of services that typically require a higher level of technical training and equipment to safely mitigate the emergency. Innisfil Fire Rescue Service provides a range of specialized training to support specialized emergency calls. The following specialized training programs are currently being delivered by the department:

- Medical Response (first aid);
- Confined space (awareness level only);
- High-angle rescue (awareness level only);
- HAZMAT (as per the County of Simcoe agreement / awareness level); and
- Shore Based Ice/Water Rescue (entry level training, Stations 1 and 2 only).

Medical calls comprise the highest percentage of the IFRS call volume annually. Medical training is completed by two in-house certified trainers. IFRS is working towards training all staff in first aid response procedures.

Given that Innisfil is located along Lake Simcoe, Water/Ice rescue has become a priority for IFRS. The department currently has a specialized team that trains monthly during the winter months. All members of the team have been trained in-house to operate the air boat. Currently, two members have a 'MED A3' commercial vessel operator's license. This is a requirement to be fully compliant. It is recommended that all firefighters assigned to the ice-water rescue team get their 'MED A3' license.

In February 2013, two IFRS full-time firefighter completed the 'Train-the-Trainer' Ice/Water course at the OFC and are now able to train all staff at the operational level, as required.

Based on our review of historical calls for service and the Community Risk Profile we are recommending that consideration be given to enhancing the training provided on rural water supply and pump operations. An initiative is currently underway to improve these core areas within the training programs. Training should also be provided to all staff on the apparatus and equipment within the department. For example, aerial training should be provided to all staff who may be required to drive, operate or support the aerial apparatus at a fire scene. It is our understanding that the IFRS is currently moving in this direction. This should be considered a priority, and could be assigned to the Training Officer position.

The current establishing By-Law (by-law 028-02) does not include specific reference to specialized services or technical rescues. In our view the by-law should be revised to reflect the level of services in these areas approved by Council.

Subject to Council approval of these service levels, the comprehensive training program should be revised to reflect the provision of these service levels and the specialized training programs. Full time and volunteer firefighters should be trained, competent and, where possible, certified to respond to specialized incidents. In our view this is an excellent example of an area IFRS' training program that will benefit significantly from providing a dedicated staff resource (e.g. Training Officer).

7.4.1 Live Fire Training

The purpose of live fire training is to provide realistic fire simulations under safe and controlled training conditions. As most municipal fire services experience relatively low volumes of fire calls it is important that the Training Division provides access for suppression staff to simulate safe and effective fire suppression operations in an appropriate training facility. Live fire training facilities can provide simulated heat, humidity, restricted vision and smoke conditions.

IFRS conducted live fire training in the summer of 2012 with a limited number of department personnel. A total of 15 firefighters and the Deputy Fire Chief completed the training at the Ontario Fire College. IFRS has booked a total of four days in 2013 to conduct live fire training at the Ontario Fire College.

Regular access to live fire training on a scheduled basis should be included within the IFRS training program. It is recommended that the new comprehensive annual training program include scheduled participation by all suppression personnel in live fire training exercises on an annual basis, as a minimum. Consideration for facilities providing live fire training should be investigated and pursued, including potential partnerships with neighbouring municipalities or industries.

7.5 Succession Planning

Succession plans provide a framework of skills and experience that are required for each position within the fire and rescue service. Succession plans can provide a career path for candidates seeking promotion or further responsibilities within the department. Succession planning can also provide senior Town staff and Council with the knowledge that trained and skilled candidates are available internally within the IFRS in the event vacancies occur. There are a number of anticipated retirements within the officer positions of the IFRS which would benefit from the timely implementation of a succession plan.

IFRS does not currently have a formal succession plan in place. Adding positions, such as a Training Officer position and enhancing public education and fire prevention opportunities within the department will create an environment for internal advancement and career building opportunities. Increasing the complement of volunteers should include an increase in the number of volunteer captains, to maintain an appropriate supervisory ratio. This will create additional positions within the department for advancement. Where possible other initiatives such as this should be considered.

7.6 Promotional Processes

There is currently a formalized promotional process in place for recruits, firefighter classification and Acting Captain promotions. Promotional processes should accurately and fairly assess the competencies of the personnel being considered. Improving promotional processes will be essential to efficiently and appropriately filling vacancies within the IFRS.

7.6.1 Recruit Promotion

As of 2012, a formal recruit training program has been implemented. Once a new recruit has completed the training program he/she must pass a written exam before joining regular training sessions and responding to fire calls.

7.6.2 Firefighter Classification Promotion

IFRS is now offering internally hosted challenge exams. Successful completion of the challenge exams identifies firefighter classification levels (e.g. Level 2 Firefighter, Level 1 Firefighter, etc.) In order to promote participation in this promotional initiative, IFRS will be implementing a wage scale in order to encourage more staff to become certified firefighters.

7.6.3 Company Officer Training

In 1988, 'Paradigm for Progress,' a Task Force Report to the Ontario Association of Fire Chiefs, recommended that the Professional Standards Setting Body (PSSB) be created with the mandate to develop a training, educational and certification system for the Ontario Fire Service.

The PSSB, under the auspices of the Ontario Association of Fire Chiefs (OAFC) and the Office of the Fire Marshal (OFM) has developed and published nine Ontario Fire Services Standards. One of these is the Company Officer Standard.

The Innisfil Fire Rescue Service currently provides company office training. Most of the full-time staff has completed their Company Officer Diploma. In 2012, IFRS implemented Company Officer Level 1 training for the volunteer officers. Current practice requires volunteer firefighters to achieve Company Officer Level 1 training as a prerequisite to becoming volunteer officers. We recommend the department formalize company officer training as part of the annual training program. It is currently a challenge to develop volunteer officers within the IFRS. Providing comprehensive, consistent and high quality training to all volunteer firefighters will be an important building block in the development of volunteer officer development. Implementing a Training Officer position will be essential to this movement of improved department training.

7.7 Facilities & Workspace

Training facilities in the form of classrooms are provided at each station. As discussed above, the classrooms at Stations 2 and 4 are currently provided within portables. These facilities were a temporary solution to provide training space; however, they have surpassed their usable life cycle. When Station 2 and 4 are replaced and rebuilt it is recommended that training space be provided within the new station facilities. Further to this it is recommended that Station 2 (the more centrally located of the two stations requiring replacement), include a large training classroom that could be used for multi-station training sessions. This station could also be designed and constructed to host a back-up Emergency Operations Centre.

It is recommended that live fire training facility opportunities and partnerships be investigated and pursued within the County.

7.8 Training Division Summary of Recommendations

As a result of our review and assessment of the Training Division we recommend that:

- *An annual training program be developed and sustained that includes all of the core functions and addresses the health and safety responsibilities of the municipality. Implementing this strategy should be considered a major priority for IFRS. This will require additional resources dedicated to the Training Division (e.g. Training Officer).*
- *That training on rural water supply and pump operations continue to be implemented and enhanced to match community need and historic call types.*
- *That training be provided to all staff on the apparatus and equipment within the department.*

- *All firefighters assigned to ice-water rescue operations be trained in-house to operate the air boat and attain a 'MED A3' commercial vessel operator's license.*
- *The establishing By-Law (by-law 028-02) be revised to reflect the level of services approved by Council including specific reference to specialized services or technical rescues.*
- *Subject to Council approval of service levels, the comprehensive training program should be revised to reflect the provision of these service levels and the specialized training programs.*
- *The new comprehensive annual training program includes scheduled participation by all suppression personnel in live fire training exercises on an annual basis, as a minimum.*
- *Live fire training facility opportunities and partnerships be investigated and pursued within the County, including potential partnerships with neighbouring municipalities or industries.*
- *IFRS consider and promote opportunities to develop succession planning within the department.*
- *IFRS develop and formalize company officer training as part of the annual training program for both full time and volunteer personnel.*

8.0 APPARATUS & EQUIPMENT / FLEET REVIEW

The Deputy Fire Chief oversees the apparatus and equipment for Innisfil Fire and Rescue Service (IFRS). The establishing by-law sets out the following responsibilities with regards to apparatus and equipment:

- Prepare specifications for the purchase of apparatus and equipment;
- Maintain and keep in repair all existing buildings, firefighting rescue and salvage apparatus;
- Modify apparatus and equipment;
- Provide for the recharging of firefighting extinguishers and air bottles/oxygen bottles and test and repair hoses;
- Issue clothing, equipment and supplies;
- Prepare the annual report and budget for Apparatus and Equipment to be submitted; and
- Such other duties as may be assigned.

8.1 Apparatus and Equipment

Overall, the apparatus and equipment within IFRS is in good condition and is meeting the needs of the municipality.

The existing fleet and model years are summarized in ***Table 14***. This table shows that the current fleet is fairly recent with only four vehicles being more than 10 years old. These include an aerial and three tankers. A new tanker is expected to be delivered in December 2013. This new tanker will replace two existing smaller tankers (the 1990 and 1991 models).

Table 14: Apparatus and Model Year

Vehicle	Description	Year
Pumper #1 	Sterling / Hale 1050	2008
Pumper #2 	Sterling / Hale 1050	2006

Pumper #3 	International / Hale 1050	2002
Pumper #4 	Sterling / Hale 1050	2007
Aerial (Ladder #3) 	Volvo / 50’ Telesquirt	2000
Aerial (Ladder #1) 	Mid-Mount Smeal 100’ Platform	2011
Tanker#1 	GMC	1998

Tanker #2 	Ford	1990
Tanker #3 	Sterling	2008
Tanker #4 	International	1991
Utility 1 (Fire Chief Vehicle) 	Dodge (3/4 ton 4x4 Pick-up Truck)	2009
Car #1 (Command Unit)	Dodge (1/2 ton 4x4 Pick-up)	2012

Car #6 (Fire Prevention Vehicle) 	Ford Escape (Sport Utility Vehicle)	2004
Rescue #1 (Rescue / Pumper) 	Spartan Metrostar	2011
Rescue #4 	E450 Ford	2004
Ice Rescue Boat 	Air Boat	2004

The 2011 Aerial is currently being used as a reserve vehicle, as limited staff are trained to drive and operate the specialized unit. This is an issue that should be addressed, and could be resolved as part of the improvement to IFRS training in the near future.

Barrie Fire Department is available to the Innisfil Fire Rescue Service through the Mutual Aid Agreement to provide additional aerial units as required.

IFRS also provides ice rescue services. The department currently has a 2004 Air Boat, however, based on discussion with IFRS staff, a new boat is required, as the existing boat has surpassed its lifecycle. An alternate option that may be considered would be to retrofit the existing equipment. The cost effectiveness of each solution and the life-cycle planning for both options should be considered.

With regards to equipment upgrades, the fire and rescue service has a capital budget and replacement plan which forecasts apparatus replacement costs up to and including the year 2016. There is budget set aside each year for volunteer firefighter bunker gear.

8.2 Maintenance

All maintenance operations required by the fire and rescue service are purchased services. Some minor inspections and maintenance is performed by the full time suppression staff. Presently there is no maintenance staff assigned within IFRS. This appears to be meeting the needs of the department for the existing conditions.

8.3 Diesel Emissions

The Ontario Fire Service has identified health and safety concerns related to diesel exhaust emissions from apparatus stored within a fire station. In response the Ministry of Labour, Section 21 Guidance Note #3-1 was developed to assist municipalities in responding to these concerns raised.

This guidance note includes a number of actions that should be taken to limit the exposure of the diesel emissions. The following is an excerpt from Guidance Note #3-1 that states:

> *"The Section 21 Committee strongly recommends the installation of direct capture type exhaust system extractors when stations are being renovated or newly constructed. Consideration should be given to having direct capture type exhaust extractors installed in all existing fire stations".*

Innisfil Fire Rescue Service uses direct capture systems on older apparatus for diesel emission control. The Town and the fire and rescue service should consider actions to limit the exposure of diesel emissions as new station facilities are planned and constructed (e.g. Stations 2, 4 and potential Station 5).

8.4 Fleet Replacement Plan

As of August 2012, IFRS implemented a municipal fleet policy to formalize the apparatus replacement process. The policy reflects what we believe to be best practices for apparatus replacement and major equipment replacement plans for municipalities with similar types of use and wear. This reflects a strategy of 15 years of service as front-line apparatus and a further five years of service in a reserve capacity reflecting a 20 year overall life cycle for major apparatus such as pumpers and tankers. ***Table 15*** summarizes the dates associated with existing apparatus replacement.

Table 15: Fleet Replacement Plan

Vehicle	Description	Year	Replacement Year
Pumper	Sterling	2008	2023
Pumper	Sterling	2006	2021
Pumper	International	2002	2017
Pumper	Sterling	2007	2022
Aerial	Volvo	2000	2015
Aerial	Mid-Mount Smeal Platform	2011	2026
Tanker	GMC	1998	2013
Tanker	Ford	1990	2005
Tanker	Sterling	2008	2023
Tanker	International	1991	2006
Pick-up	Dodge	2009	2024
Pick-up	Dodge	2012	2027
Sport Utility Vehicle	Ford Escape	2004	2019
Rescue Vehicle	Spartan Metrostar	2011	2026
Rescue Vehicle	E450 Ford	2004	2019
Ice Rescue Boat	Air Boat	2004	2014

8.5 Future Fleet Considerations

With the proposed opening of a Station 5, IFRS will require an additional front-line apparatus for emergency response coverage. In addition, fleet considerations should provide seats in order to transport an appropriate depth of response from the fire station. It is anticipated that the costs for capital purchases in these developing areas would be funded, at least in part, by development charges.

Transport of suppression staff from all stations should be considered as the complements of volunteers and IFRS staffing levels increase. Options such as passenger vans should be considered at all stations to ensure no personnel are required to use personal vehicles to respond to incidents.

8.6 Apparatus & Equipment Summary of Recommendations

As a result of our review of IFRS, apparatus & equipment we recommend that:

- *The Town and the fire and rescue service consider full implementation of diesel emissions requirements. This is especially relevant as new station facilities are planned and constructed (e.g. Stations 2, 4 and potential Station 5);*
- *IFRS develop and implement training for suppression staff in order to fully utilize the existing 2011 aerial unit;*
- *IFRS consider replacement of air boat in 2014 for ice water rescue;*
- *IFRS formalize a fleet and equipment replacement plan;*
- *With the proposed opening of a Station 5, IFRS acquire an additional front-line apparatus for emergency response coverage and vehicles to provide seats in order to transport an appropriate depth of response from the fire station. It is anticipated that most of the costs for capital purchases associated with this station would be funded by development charges.*
- *Options such as passenger vans should be considered at all stations to ensure no personnel are required to use personal vehicles to respond to incidents. Transport of suppression staff from all stations should be considered as the complements of volunteers and IFRS staffing levels increase.*

9.0 STUDY CONSULTATION

The process of developing a Fire Master Plan for the Town of Innisfil involved various consultation activities. Effective communication and consultation with stakeholders and the community is essential to ensure that those responsible for implementing this Fire Master Plan, and those with a vested interest, understand the basis on which certain decisions are made and why particular actions are required.

9.1 Steering Committee

The Steering Committee for the study was comprised of several members of Town staff, IFRS staff and Council. The committee members were:

- Fire Chief
- Chief Administrative Officer (CAO)
- Town Mayor
- Deputy Fire Chief
- Fire Prevention Officer
- Firefighters' Association President
- Representative of the Volunteer Firefighters
- Planning Services Representative
- Human Resources Representative
- Finance Services Representative

9.2 Project Meetings

Throughout this study, the Dillon team met with the Steering Committee to keep them abreast of study progress. The following meetings took place:

- Project Meeting #1 Project Initiation – May 23, 2012
- Project Meeting #2 Preliminary Findings & Recommendations – September 18, 2012
- Project Meeting#3 Present Draft Report – April 22, 2013
- Project Meeting#4 Present Final Report to Council – June 19, 2013 (Scheduled)

9.3 Stakeholder Consultation

Stakeholders can provide valuable input at each step of the process, providing information about context and background from different perspectives. This helps to identify issues and needs associated with the fire and emergency service. As well it provides information that is used for study analysis and recommendation phases. Engaging stakeholders helps ensure that multiple perspectives can be brought to the fire master planning process.

9.3.1 Interviews with Steering Committee Members

Information and feedback was collected from members of the Project Steering Committee and key stakeholders via informal interviews held following the Project Initiation Meeting. This was an opportunity to gather background information for the environmental scan and input on strengths, opportunities, challenges and threats from the point of view of these key stakeholders. This was an essential stage in developing strategic goals and objectives for the fire master planning process.

9.3.2 Council Workshop Education and Training Session

The engagement of Council in the Fire Master Plan process is paramount in ensuring overall municipal goals are met within the study recommendations and Council feel that they have ownership of the study. A workshop session was held with Council on August 8, 2012. This was an education and training session, held with Council outside of Council Chambers. The consultant team delivered a formal presentation to Council to introduce the purpose and background behind the fire master planning process and gather feedback regarding key issues, concerns or interests. The opportunity for questions and discussion followed the presentation.

Council members were also provided the opportunity to discuss the study one-on-one with the consultant team during drop-in sessions held on October 24, 2012.

9.3.3 Volunteer and Full Time Firefighter Sessions

Stakeholder sessions were held at each of the four fire stations that comprise the Innisfil Fire Rescue Service. Sessions were held on Tuesday, October 23rd, 2012 at Stations 1 and 3 and Wednesday, October 24th, 2012 at Stations 2 and 4.

A presentation was delivered to stakeholder group to introduce the master fire planning process. This was followed by open discussion to gather feedback from these key stakeholders regarding the strengths, weaknesses, opportunities and challenges of the fire department for consideration in the Fire Master Plan.

9.3.4 Community Information Open House

A Community Information Open House was held on September 29, 2012 at the Town of Innisfil Town Hall. The timing of this session (held on a Saturday, prior to Thanksgiving weekend) was intended to be inclusive of the large population of cottage owners in the Town of Innisfil. In order to maximize availability of the information to community members, the presentation to the public was recorded and made available on the IFRS' website (http://www.innisfil.ca/fire-master-plan). A copy of this presentation as well as the public information display boards is included in ***Appendix C***.

9.4 Summary of Study Consultation

Consultation was conducted with key stakeholders, Town staff, Town Council, Innisfil Fire and Rescue Services staff and members of the public throughout the course of the Fire Master Planning Study. Interviews with key stakeholders and staff members were an essential component of the data collection and project initiation processes. It provided insight into the strengths, weaknesses, opportunities and constraints facing the fire services and the issues to be considered within the FMP. Consultation included Steering Committee Meetings, Project Meetings, Council Workshop Session and a Community Information Open House.

Study consultation allows for input into the FMP by study stakeholders and also provides an opportunity to inform stakeholder and the public about the FMP purpose, goals and recommendations. Support from Town staff and Council is essential to the success of the FMP, therefore, including these key stakeholders throughout the planning process is essential and highly beneficial.

10.0 IMPLEMENTATION PLAN

The recommendations of this Fire Master Plan support the goal of developing Innisfil Fire and Rescue Service as a unified fire department. Many of the recommendations require no additional financial commitment. For those recommendations requiring further financial support by Council the following implementation plan has been developed to provide a high level overview of the potential cost impacts of the recommendations. The operating and capital costs identified reflect cost estimates based our experience.

Our recommendation subject to Council's approval of this Fire Master Plan is to request the Fire Chief to provide a detailed financial implementation plan utilizing the information provided below in ***Table 16.***

Table 16: Implementation Plan

Horizon	Description	Approximate Funding Required	
		Operating Budget	**Capital Budget**
Immediate Term 2013	Tanker 4 Replacement (December 2013)		$260,000*
	Implement the position of Training Officer *(Staffing Considerations Option 5)*	$80,000*	
	Renewal of Superior Tanker Shuttle Accreditation	$5,000	
Short-term 2014 to 2015	Implement the position of Public Education Officer / Prevention Support	$80,000	
	Part –time administrative support position	$30,000	
	Rebuild Station 2 (including new Headquarters and large training room)		$2,500,000
	Increase complement of Volunteer Firefighters at existing stations (add 24 volunteer firefighters @ $7,200 base pay per firefighter). *(Staffing Considerations Option 1)*	$172,800	
	Additional training hours for increased complement of 24 firefighters @ $2,500 training pay per firefighter.	$60,000	
	New Volunteer Firefighter bunker gear for increased complement of 24 firefighters @ $3,500 per firefighter.		$84,000
	Schedule two volunteers at Station 1 for normal business hours (8 am to 6 pm, weekdays) *(Staffing Considerations Option 2)*	$130,000	

Horizon	Description	Approximate Funding Required	
		Operating Budget	**Capital Budget**
	Rebuild Station 4		$2,500,000
Midterm 2016-2019	Hire two day-time suppression staff for Station 1 (including bunker gear, uniforms, etc.) *(Staffing Considerations Option 3)*	$200,000	$8,000
	Purchase two crew vans for staff transport (Stations 2 and 3)		$92,000
	Build New Station 5		$2,500,000*
	New complement of volunteers for Station 5 (30 volunteer firefighters @ $6,000 base pay per)	$180,000	
	Additional training hours for new complement of 30 firefighters @ $2,500 training pay per firefighter.	$75,000	
	New Volunteer Firefighter bunker gear for Station 5 complement of 30 firefighters @ $3,500 per firefighter.		$105,000*
	Purchase new Pumper Station 5		$360,000
Long-term 2020 to 2022	Hire 10 additional full-time firefighters (including bunker gear, uniforms, etc.) to staff Pumper-Rescue 1 with four firefighters 24 hours per day, seven days per week. *(Staffing Considerations Option 4)*	$1,000,000	$40,000
	Live Fire Training Facility Partnership / Rental		$15,000
	Replace Rescue 4 at Station 3 (with seats for crew transport)		$60,000
	Part-time administration support increase to full-time	$30,000	

*Note: *Financial considerations contained within existing operating / capital plans.*

APPENDIX A
Community Risk Assessment

Table of Contents

Page

List of Figures

List of Tables

A1.0 DETAILED COMMUNITY RISK ASSESSMENT

A1.1 Introduction

The Office of the Fire Marshal, Ontario (OFM) provides a number of tools to assist municipalities, and ultimately municipal councils, in determining local needs and circumstances as required by the FPPA. These tools include the Comprehensive Fire Safety Effectiveness Model; the Fire Risk Sub-Model and Public Fire Safety Guideline 01-01-01 "*Fire Protection Review Process".*

PFSG 01-01-01 "*Fire Protection Review Process" further identifies the three primary components of assessing community needs and circumstances including:*

- ✓ *Assessing Economic Circumstances from a Fire Protection Perspective (PFSG 02-03-0)*
- ✓ ***Assessing Fire Risk (PFSG 02-02-12)***
- ✓ *Assessing the Existing Fire Protection Services (PFSG 02-04-01)*

This section provides a detailed assessment of the current and future (planned growth) fire risk within the Town of Innisfil.

A1.2 OFM Fire Risk Sub-Model

The community fire risk analyses within this report follow the OFM framework and specifically the OFM Fire Risk Sub-Model. The model identifies the importance of community risk in the following introductory paragraphs:

> "*Assessing the fire risk within a community is one of the seven components that comprise the Comprehensive Fire Safety Effectiveness Model. It is the process of examining and analyzing the relevant factors that characterize the community and applying this information to identify potential fire risk scenarios that may be encountered. The assessment includes an analysis of the likelihood of these scenarios occurring and their subsequent consequences.*"
>
> *"The types of fire risks that a community may be expected to encounter are influenced by its defining characteristics. For example, a "bedroom community" presents a different set of circumstances over one that is characterized as an "industrial town". Communities that are distinguished by older buildings will pose a different set of concerns over those that are comprised of newer buildings constructed to modern building codes. Communities populated by a high percentage of senior citizens present a different challenge over ones with a younger population base.*
>
> *Assessing fire risk should begin with a review of all available and relevant information that defines and characterizes your community. Eight key factors have been identified that contribute to the community's inherent characteristics and circumstances. These factors influence events that shape potential fire scenarios along with the severity of their outcomes:*
>
> - *Property Stock*
> - *Building Height and Area*
> - *Building Age and Construction*

- *Building Exposures*
- *Demographic Profile*
- *Geography/Topography/Road Infrastructure*
- *Past Fire Loss Statistics*
- *Fuel Load*

Using the framework provided within the OFM's Fire Risk Sub-model the potential fire risk scenarios present within the community can be assessed by creating a Community Fire Risk Profile. The profile can then be applied to assess the current level of fire protection services provided, and identify where if any potential gaps exist, or identify areas that a municipal Council may want to consider in determining its own 'needs and circumstances', as defined by the Fire Protection and Prevention Act (FPPA).

A1.3 Assessing Fire Risk Scenarios

The Fire Risk Sub-Model provides communities with the flexibility to determine how their municipality should be defined in terms of fire risk scenarios. Specifically, the model states that:

> *For analyses purposes, the community being assessed can be defined as the municipality in its entirety or as a particular segment of it that distinguishes it from other parts. For smaller municipalities, it may be sufficient to simply define the community based on town boundaries. For larger municipalities, it may be appropriate to subdivide it into separate and distinct components to permit more detailed analysis. For example, it may be convenient to subdivide a municipality based on residential subdivision, downtown sections, industrial park, and a rural area. Hence, the first step in conducting a fire risk analyses is to identify and define the community(s) being analyzed".*

The analyses within this Fire Master Plan utilize the major occupancy classifications of the Ontario Building Code (OBC) to define the fire risk scenarios within the Town of Innisfil.

A1.4 Property Stock

The OBC categorizes buildings by their major occupancy classifications. Each classification has inherent definitions that distinguish it from other occupancy classifications. Utilizing the OBC as the source for defining the occupancy classifications provides a recognized definition and baseline for developing the Community Risk Profile.

The OBC major occupancy classifications are divided into six major building occupancy classifications (groups). Within each group the occupancies are furthered defined by division. The OBC major classification groups and divisions are presented in **Table 1**.

Table 1: OBC Major Occupancy Classification

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

A1.4.1 *Community Risk Profile – Major Occupancy Classifications*

The Fire Risk Sub-model developed by the Office of the Fire Marshal utilizes the major group classifications only (Group A, B, C, D, E, F). The Fire Risk Sub-model does not use the detailed "Division" classifications provided for the respective occupancy groups.

This strategy provides the ability to assess property stock within a community comparatively by major occupancy groups thus providing a consistent and recognized definition for each major occupancy type. Where necessary this strategy provides the opportunity for further analysis of a specific occupancy group. For example a '*Group F Industrial*' that is a '*Division 1*' is a '*High hazard industrial occupancy*'. Subject to any site specific hazards or concerns individual occupancies within this group can be assessed individually and then included where required within the scope of the broader community risk profile.

The following describes the major occupancy classifications used within the Fire Risk Sub-model.

A1.4.2 *Assembly Occupancies (Group A)*

Assembly occupancies are defined by the OBC as the "*occupancy* or the use of a *building* or part of a *building* by a gathering of persons for civic, political, travel, religious, social, educational, recreational or similar purposes or for the consumption of food or drink".

Risks within these occupancies can include:

- overcrowding by patrons
- lack of patron familiarity with emergency exit locations and procedures
- staff training in emergency procedures
- large quantities of combustible furnishings and decorations

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *automatic fire detection and monitoring systems*
- ✓ *approved Fire Safety Plan and staff training*
- ✓ *pre-planning by fire suppression staff*

A1.4.3 *Care and Detention Occupancies (Group B)*

A care or detention occupancy means the occupancy or use of a building or part thereof by persons who;

- ➢ are dependent on others to release security devices to permit exit;
- ➢ receive special care and treatment; or
- ➢ receive supervisory care.

Risks within these occupancies can include:

- inability to evacuate or relocate patients
- presence of flammable/combustible gases
- vulnerable occupants
- combustible furnishings

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *automatic fire detection and monitoring systems*
- ✓ *approved Fire Safety Plan and staff training*
- ✓ *pre-planning by fire suppression staff*

A1.4.4 *Residential Occupancies (Group C)*

A residential occupancy is defined as one that is used by persons for whom sleeping accommodation is provided but who are not harboured or detained there to receive medical care or treatment or who are not involuntarily detained there.

Within this occupancy classification both the Ontario Fire Code (OFC) and the Ontario Building Code classify residential low-rise buildings as up to and including six stories in building height. Buildings in excess of six stories are considered as high-rise buildings. Comparatively Statistics Canada defines low-rise buildings as being less than five stories in building height and high-rise as five stories and greater.

Another example of a use within this occupancy group would be mobile homes or travel trailers. The common factor is overnight accommodation (sleeping) when an occupant can be at the highest risk.
As the primary source for data regarding community risk factors is provided by Statistics Canada this analysis utilizes the Statistics Canada definitions for residential occupancies.

Risks within these occupancies can include:

- overnight accommodation (sleeping)
- combustible furnishings
- secondary units (basement apartments)
- high density
- human behavior (cooking, use of candles, etc.)

Proactive measures for reducing risks can include:

- ✓ Smoke Alarm Program
- ✓ Public Education Programming including Home Escape Planning
- ✓ Retro-fit and compliance inspection cycles for OBC and OFC compliance
- ✓ Pre-planning by fire suppression staff

A1.4.5 *Business and Personal Services Occupancies (Group D)*

Business and personal services occupancies are defined as those that are used for the transaction of business or the provision of professional or personal services.

These occupancies can be located within remodelled single family dwellings, low-rise and high-rise buildings. Each of these building types can present different risks including egress for firefighting operations and evacuation by occupants.

Risks within these occupancies can include:

- high volume of occupants
- high combustible loading
- specialized equipment utilizing high risk substances such as radiation
- consumers unfamiliar with emergency exits and procedures

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles to sustain OFC compliance*
- ✓ *targeted fire prevention inspections for OFC retro-fit compliance*
- ✓ *staff training in fire prevention and evacuation procedures*
- ✓ *public education*
- ✓ *pre-planning by fire suppression staff*

A1.4.6 *Mercantile Occupancies (Group E)*

This occupancy is defined as one that is used for the displaying or selling of retail goods, wares, and merchandise.

These occupancies range in size and potential risk from smaller neighbourhood corner stores to the large "big box" industrial style buildings that survive on the sale of large volume. Large volumes of combustibles are typically present in all applications.

Risks within these occupancies can include:

- high volume of occupants/staff
- high volume of combustible loading/high rack storage
- lack of occupant familiarity with emergency exit locations and procedures
- size of building

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *automatic fire detection and monitoring systems*
- ✓ *approved Fire Safety Plan and staff training*
- ✓ *pre-planning by fire suppression staff*

A1.4.7 *High/Medium/Low Hazard Industrial Occupancies (Group F)*

Industrial occupancies are defined as those used for the assembly, fabrication, manufacturing, processing, repairing or storing of goods and materials. This category is divided into low hazard (F3), medium hazard (F2) and high hazard (F1) based on its combustible content and potential for rapid fire growth.

The potential for major fires within this occupancy type is related to the high levels of combustibles that are present in storage and utilized in the manufacturing process. This can include highly flammable and corrosive products.

Risks within these occupancies can include:

- large dollar loss as a result of a major fire
- economic loss in the event of plant shut downs and job loss
- environmental impacts
- presence of ignition sources related to processing activities

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *staff training in fire prevention and evacuation*
- ✓ *public education*
- ✓ *pre-planning by fire suppression staff*
- ✓ *installation of early detection systems (smoke alarms, heat detectors)*
- ✓ *installation of automatic sprinkler systems*

A1.4.8 *Other Occupancies/Uses not listed within the OBC (Not Classified)*

There are other occupancies and uses not included within the OBC major building occupancy classifications that should be considered as part of developing the Community Risk Profile. These include occupancies that may be regulated under other legislation such as federally or provincially owned facilities.

Examples of these include:

- *major railway lines*
- *major highways and transportation corridors*
- *outdoor tire storage facilities*
- *farm / agricultural buildings*

A1.4.9 *Property Stock Analysis*

Utilizing the property stock classifications contained within the Fire Risk Sub-model **Table 2** provides a summary of the property stock within the Town of Innisfil.

Table 2: Property Stock Profile Town of Innisfil

Occupancy Classification (OBC)	**Occupancy Definition Fire Risk Sub-model (OFM)**	**Number of Occupancies**	**Percentage of Occupancies**
Group A – Assembly	*Assembly occupancies*	45	0.3%
Group B - Institutional	*Care or Detention occupancies*	2	0.01%
Group C - Residential	*Residential occupancies*	12,295	96.3%
Group D/E - Commercial	*Business and Personal Services Occupancies*	345	2.7%
Group F - Industrial	*Industrial occupancies*	78	0.6%
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	Not Tracked	Not Tracked
Totals		12,765	100%

The majority of property stock (96.3%) in the Town of Innisfil is Group C residential. This is indicative of a Town that represents the risk of a small town functioning as a type of "bedroom community". The second largest percentage of property stock (2.7%) consists of Group D/E Commercial.

This particular analysis confirms that as a community the Innisfil represents the typical level of risk that would be found in comparable municipalities within the Province of Ontario. These include smaller urban centres surrounded by large tracts of agricultural areas forming a larger community. Agriculture is very prevalent throughout the Town. Farm buildings (not classified within the OBC) vary in size and use from small utility sheds to large livestock barns.

The Town's other occupancies include industry assembly occupancies. The industrial occupancies are mainly located in the 400 Industrial Park. Commercial occupancies are located within the downtown core, however most new commercial development is occurring outside of this area.

A1.4.10 *Property Stock Profile Observations*

The analysis of the Property Stock Profile for the Town of Innisfil confirms that the largest percentage of major occupancies (96.3%) is "Group C" residential. Significant priority should be given to developing a Fire Master Plan that reflects the risks associated with this occupancy category. A key element in mitigating residential risks is maximizing the use of all three lines of defence.

The priority of addressing the residential fire risk is supported by the historic data[1] provided by the Office of the Fire Marshal, Ontario that reports for the period from 2007 to 2011 residential fires accounted for 71% of all structure fire losses and for the period from 2001 to 2010 residential fires accounted for 86% of all fire fatalities.

[1]Sources, OFM website:
http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFatalities/FatalFiresSummary/stats_fatal_summary.html

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFires/FireLossesCausesTrendsIssues/stats_causes.html

A2.0 BUILDING HEIGHT AND AREA

Buildings that are taller in height, or contain a large amount of square footage (footprint) can have a greater fire loss risk and life safety concern.

A2.1 Building Height

One of the unique characteristics and risks of tall / multi-storey buildings is known as the "stack effect". This is characterized as vertical air movement occurring throughout the building, caused by air flowing into and out of the building typically through open doors and windows. The resulting buoyancy caused by the differences between the indoor/outdoor temperature and elevation differences causes smoke and heat to rise within the building. This can have a dramatic effect on smoke permeation throughout the common areas and individual units within the building. This can be directly related to the high percentage of deaths that occur in high-rise buildings as a result of smoke inhalation.

The nature of taller buildings also brings the presence of higher occupant loads and higher fuel loads due to the quantity of furnishings and building materials. Efficient evacuation can also be a challenging process due to a lack of direction / signage and knowledge / familiarity of the occupants which may result in overcrowding of stairways and exit routes.

Ensuring all required life safety systems are in place and functioning is a priority for these occupancies. Taller buildings can experience extended rescue / suppression response times for firefighters to ascend to the upper levels. Options such as "shelter-in-place" whereby occupants are directed by the fire department to stay within their units can be an effective strategy. However, ensuring internal building communications systems are in place and functioning is critical to the success of this strategy.

There is one residential high-rise building within the Town. It is a retirement residence and is fully equipped with sprinkler systems.

A2.2 Building Area

Building area can cause comparable challenges as those present in taller buildings. Horizontal travel distances rather than vertical can mean extended response times by firefighters attempting rescue or fire suppression activities.

Large buildings, such as industrial plants and warehouses, department stores, and the new "big box" stores, can contain large volumes of combustible materials. In many of these occupancies the use of high rack storage is also present. Fires within this type of storage system can be difficult to access and cause additional risk to firefighter safety, due to collapse risks.

The Town has a small number of large industrial/commercial/mixed-use buildings. For example, the Cookstown Outlet Mall, located at the Highway 400 interchange with County Road 89, is a very large building in terms of square footage. Other examples of buildings with large areas and potential fire loss risk include:

- RV Warehouse, combustible material in and around the main building,
- Georgian Downs and Slots, large buildings with patronage unfamiliar with fire exit strategies; and
- Roadshow's 400 Antiques Mall, large buildings with combustible wood antiques.

The Town also has a historic downtown core in Cookstown consisting of multi-unit buildings containing mixed-use occupancies as defined by the OBC. Many of these include residential units above commercial stores located on the ground floor. In terms of building height these buildings would not be considered higher risk; however, in terms of area these buildings cover relatively large areas (square footage) of Cookstown.

A2.2.1 *Building Height and Area Observations*

The analysis of the buildings within the Town in regards to height and area represent a minimal risk. This includes all occupancy classifications. There are also a limited number of large area (by square footage) buildings. These include a few retail/entertainment buildings that are frequented by clientele that are unfamiliar with the emergency exits. There are also some industrial/commercial buildings that contain combustible contents. The multi-use occupancies in the core area of Cookstown in addition to their large coverage area represent a potentially significant fire loss risk and life safety risk due to the presence of residential occupancies above many of the commercial occupancies.

The observations of this section are consistent with the need to prioritize a pro-active fire inspection and compliance program. These strategies should be aligned with optimization of the first two lines of defence.

A2.3 Building Age and Construction

The Town of Innisfil is a compilation of hamlets and small urban areas scattered throughout a mainly rural setting. Many of the communities located on or close to Cooks Bay started as cottage and recreation communities but have evolved to include many permanent residents. These areas have been primarily developed in the last few decades. The settlement of Cooksville has a historic core which began to develop in the 1800s. Many of the older buildings within the core have historic ties to this era.

A2.3.1 *Building/Fire Code Application*

The Ontario Building Code (OBC) was adopted in 1975. The Ontario Fire Code (OFC) was similarly adopted in 1981. Together these two documents have provided the foundation for eliminating many of the inconsistencies in building construction and maintenance that were present before their adoption.

The OBC and the OFC were developed to ensure uniform building construction and maintenance standards are applied for all new building construction. The codes also provide for specific fire safety measures depending on the use of the building. Examples of the fire safety issues that are addressed include:

- *occupancy*
- *exits/means of egress including signs and lighting*
- *fire alarm and detection equipment*
- *fire department access*
- *inspection, testing, and maintenance*

In 1983 the OFC was further expanded to include retrofit requirements for many of the building constructed prior to adoption of the code. Retrofit requirements were established to ensure a minimum acceptable level of life safety is present. A number of occupancy types are included within the retrofit requirements including assembly, boarding, lodging and rooming houses, health care facilities, multi-unit residential, two-unit residential, and hotels.

A2.3.2 *Residential Buildings*

The priority of addressing the residential fire risk is supported by the historic data provided by the Office of the Fire Marshal, Ontario that reports[2] for the period from 2006 to 2010 residential fires accounted for 72% of all structure fire losses and for the period from 2001 to 2010 residential fires accounted for 86% of all fire fatalities.

These facts make understanding the age and construction of a community's residential building stock an important component of developing a Community Risk Profile.

The Town of Innisfil residential building structural dwelling types are summarized in **Table 3**.

Table 3: Residential Structural Dwelling Type

Structural Dwelling Type	Town of Innisfil[3]	% of Units	Ontario[4]	% of Units
Single-Detached House	11,465	93.2	2,718,880	55.6
Semi-Detached House	45	0.4	279,470	5.7
Row House	440	3.6	415,230	8.5
Apartment-Duplex	195	1.6	160,460	3.3
Apartment-more than 5 Stories	5	0.0	789,975	16.2
Apartment-less than 5 Stories	130	1.1	498,160	10.2
Other single-attached House	20	0.2	9,535	0.2
Movable Dwelling	5	0.0	15,795	0.3
Total	12,295	100	4,887,510	100

In comparison to the provincial data the Town of Innisfil percentage of single-detached housing of 93.2% represents a significantly larger component of the residential dwelling types than that of the province at 55.6%. Row houses are the second highest percentage of residential dwellings at 3.6% which is lower than the provincial percentage of 8.5%.

Historical data provided by the Office of the Fire Marshal indicates that fires in single-detached dwellings are responsible for nearly two thirds of all residential fires. The data further indicates that detached homes generally account for 80% of all single-family dwelling fires, with semi-detached and attached homes evenly contributing the remaining 20%.

The Town of Innisfil's residential buildings age are summarized in **Table 4**.

---

[2] Source, OFM website:
http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFatalities/FatalFiresSummary/stats_fatal_summary.html

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFires/FireLossesCausesTrendsIssues/stats_causes.html

[3] Source: *Statistics Canada - 2011 Census Data*

[4] Source: *Statistics Canada - 2011 Census Data*

Table 4: Age of Construction

Period of Construction	Town of Innisfil	% of Units	Ontario	% of Units
Prior to 1946	1135	10.0	677,870	14.9
1946 to 1960	1225	10.8	690,150	15.2
1961 to 1970	1230	10.8	640,660	14.0
1971 to 1980	2015	17.7	776,745	17.0
1981 to 1985	735	6.5	338,575	7.4
1986 to 1990	1585	13.9	410,155	9.0
1991 to 1995	1005	8.8	291,480	6.4
1996 to 2000	1240	10.9	312,215	6.9
2001 to 2006	1225	10.8	417,165	9.2
Total	11,395	100	4,555,015	100

An important component of this analysis is the percentage of residential buildings built prior to the adoption of the Ontario Fire Code (OFC) in 1981. **Table 4** indicates that 49% of the Towns residential buildings were built prior to 1981 in comparison to 61% of those in Ontario.

In relation to the OFC the Town has a relatively newer percentage of residential dwelling buildings than that of the province.

A2.3.3 *Non-Residential Buildings*

During the late 19th century and early 20th century's balloon frame construction was a common framing technique used in both residential and small commercial construction. This technique permitted the spread of fire and smoke to move rapidly from the lower floors to upper floors and the roof level. Understanding the age of construction of dwellings can assist in determining if balloon framing may have been utilized.

Modern construction techniques have introduced the use of platform construction whereby each level is built as a component of the overall structure. This technique in addition to the use of fire stops has reduced the extension of fire and smoke by creating horizontal barriers.

Specific information such as the census data is not available for non-residential buildings; however the experience of community planning and development provides a relative comparison when assessing the age and construction of a community. Tours of the community and discussions with Town staff indicate that a large percentage of the non-residential buildings also pre-date the OFC adoption in 1981 with the exception of Alcona, as this area has experienced rapid growth in the past ten years.

A2.3.4 *Building Age and Construction Observations*

As a community the current building stock of the Town is representative of small urban settlement areas that have grown over the past century to the current mixed use urban/rural community.

Residential single-detached housing units represent 93.2% of the 12,295 residential dwelling structures. 49% of the residential building stock was built prior to adoption of the Ontario Fire Code in 1981.

The majority of the residential building stock is of newer construction technology including flame retardant materials and construction techniques. Buildings within the downtown core represent the highest fire loss risk due to age and construction.

A2.4 Building Exposures

Closely spaced buildings, typical of historic downtown core areas and newer infill construction, have a higher risk of a fire propagating (spreading to an adjacent exposed building). A fire originating in one building could easily be transferred to neighbouring structures due to the close proximity. The close proximity of buildings can also impede firefighting operations due to the limited access for firefighters and equipment.

Adoption of the OBC and the OFC has required spatial separations and the use of fire retardant materials and construction methods to reduce the fire risks. In addition to the construction and planning requirements within the respective codes, basic firefighting practices consider the protection of exposures as a primary function and consideration in the event of a response by the fire department.

A2.4.1 *Building Exposures Observations*

The risk of exposures as a result of a fire can occur in incidents involving buildings that are in compliance with current OBC and OFC requirements as well as those that may have been constructed prior to these public safety initiatives.

As a large percentage of the building stock within the Town of Innisfil was constructed prior to the current OFC the probability of a fire spreading to involve other exposures is of concern.

The age and construction of the buildings within the downtown core present the most significant risk for fire spread both internally and to adjacent buildings due to the close proximity and combustible construction of many of these buildings.

A3.0 DEMOGRAPHIC PROFILE

In terms of demographic profile with regard to developing a community risk profile it is important to understand a number of key factors related to residents of the community. Assessing these factors in relation to provincial statistics is an effective tool in understanding where there may be vulnerable groups in terms of fire or life risk, or barriers such as language that could affect communication of public education programs. The key factors within the demographic profile include:

- Population Distribution by Age Group
- Population Shifts
- Vulnerable Individuals or Occupancies
- Language Barriers to Public Education
- Income level

A3.1 Population Distribution by Age Group

Within Canada our aging population has been recognized as one of the most significant demographic trends. Based on current data it is predicted that by the year 2026, one in every five Canadians will have reached the age 65. Seniors, those 65 and above represent one of the highest fire risk target groups in Ontario.

Information provided by the Office of the Fire Marshal indicates that "*between 2000 and 2004 the leading cause of senior (aged 65 and over) fire deaths were attributed to "open flame tools/smoker's articles" and "cooking equipment". These ignition sources were responsible for 35% and 10% respectfully of fire deaths for this age category during this period. It is believed that the decline in cognitive and physical abilities contributes to the frequency of fire incidents relating to careless use of these ignition sources".*

Identifying a community's population by age category is a core component of developing the Community Risk Profile and identifying specific measures that may be required to mitigate risks associated with a specific age group, such as seniors.

Table 5 provides a comparison of the Town's population by age group to that of the provincial statistics according to the 2011 census from Statistics Canada.

Table 5: Age Group[5]

Age Characteristics of the Population	Innisfil		Ontario	
	Total	% Total	Total	% Total
Total population	33,075	-	12,851,820	-
0 to 4 years	1,680	5.1%	704,260	5.5%
5 to 9 years	1,860	5.6%	712,755	5.5%

[5] Source: *Statistics Canada - 2011 Census Data*

Age Characteristics of the Population	Innisfil		Ontario	
	Total	% Total	Total	% Total
10 to 14 years	2,160	6.5%	763,755	5.9%
15 to 19 years	2,520	7.6%	863,635	6.7%
20 to 24 years	1,795	5.4%	852,910	6.6%
25 to 44 years	7,960	24.1%	3,383,890	26.3%
45 to 54 years	6,260	18.9%	2,062,020	16.0%
55 to 64 years	4,050	12.2%	1,630,275	12.7%
65 to 74 years	2,770	8.4%	1,004,265	7.8%
75 to 84 years	1,575	4.8%	627,660	4.9%
85 years and over	445	1.4%	246,400	1.9%
Median age of the population	42.3	-	40.0	-
% of the population aged 14 and under	5,700	17.2%	2,180,770	17.0%
% of the population aged 65 and over	4,790	14.5%	1,878,325	14.6%

This comparison indicates that the age characteristics of the population within the Town are relatively consistent with that of the province.

Table 6 was prepared using information from the OFM's review of Ontario Fatal Fires during the ten year period from 2001 to 2010 (*revised October 2011*). Although no particular age group stands out as a significantly higher risk, when the number of fatalities per million population is calculated, the seniors' age groups are at the greatest risk of fire death compared to other age groups.

Table 6: Provincial % of Fire Fatalities by Age Group

Age Characteristics of the Population	% of Age Group
0 to 10 years	8%
10 to 19 years	6%
20 to 29 years	6%
30 to 39 years	10%

Age Characteristics of the Population	% of Age Group
40 to 49 years	19%
50 to 59 years	14%
60 to 69 years	12%
70 to 79 years	13%
80+ years	12%

As indicated by the Provincial data, seniors tend to be more at risk. In comparison, the seniors' population of the Town of Innisfil as a percentage of the overall population is similar to that of the provincial data.

A3.2 Population Shifts

The population within a community can shift at various times during the day or week and throughout the year. This can be as a result of residents that are required to leave the community to seek employment as opposed to those having employment opportunities within the community. Other examples can include tourist and vacation destinations within a community. Large population shifts can occur during summer months as a direct result of the seasonal availability of these activities or tourism draws within a community.

Communities that are home to educational institutions such as colleges and universities can have a different population shift during the fall and winter months when students are attending school and residing in the community (e.g. student residences).

In both instances the increased risk due to overnight accommodation (e.g. sleeping) either in a trailer/hotel/or school residence can be a major factor which can impact the demand for fire protection services.

The Town of Innisfil has two minor population shifts that should be noted. The first is the daily population shift as commuters leave the various urban communities and settlements in Innisfil for jobs in the Greater Toronto Area. The other is the influx of cottagers on summer weekends accessing the water activities in Cooks Bay and Lake Simcoe from the Innisfil shoreline. Specific fire protection strategies to address population shifts should not be required; they should be accommodated as part of broader services such as pro-active fire inspections of the facilities occupied by this demographic.

A3.3 Vulnerable Individuals or Occupancies

Identifying the location and number of vulnerable individuals, or occupancies within the community will provide insight into the magnitude of this particular demographic within a community. This demographic is typically defined as requiring some type of assistance due to physical/cognitive limitations, disabilities, drug or alcohol use and others that may require assistance to evacuate in the event of a fire.

Occupancies that should be considered when assessing this demographic include hospitals, seniors' apartments, group homes, rooming houses, residential care facilities, daycare centres and long-term care facilities. **Table 7** lists the retirement homes and communities in Innisfil.

Table 7: Retirement Homes and Communities in Innisfil

Community	Address
Sandycove Acres	908 Lockhart Road, Stroud
Lakeside Retirement At Innisfil	985 Innisfil Beach Road, Innisfil
Royal Oak Estates	1 Royal Oak Drive, Cookstown

A3.4 Language Barriers to Public Education

Cultural diversity and ethnic background can be factor that fire departments must consider in developing and delivering programs related to fire prevention and public education. Communication barriers in terms of language and the ability to read written material can have an impact of the success of these programs. **Table 8** provides a breakdown of the mother tongue of residents within the Town based on the 2006 Statistics Canada census information.

Table 8: Mother Tongue of Innisfil Residents

Language	Innisfil		Ontario	
	Total	% Total	Total	% Total
Total population	**31,110**	-	**12,028,895**	-
English	27,800	90%	8,230,705	69%
French	395	1%	488,815	4%
English and French	70	0%	32,685	0%
Other	2,845	9%	3,276,685	27%

English is the primary language of the Town's population (90%). Therefore language barriers are expected to be relatively infrequent. However, communications barriers, including language differences, should still be taken into consideration, especially when working with specific community groups.

A3.5 Income Levels

Table 9 summarizes household data from the 2006 Census from Statistics Canada. Innisfil, as a Town, has a higher population density than the province. Innisfil also has a higher median income and a lower average value of owned dwellings than the provincial average. These statistics are typical of a predominantly rural / sub-urban community in close proximity to a regional centre.

Table 9: 2006 Statistics Canada Household Data

Census Characteristic	Innisfil	Ontario
Population Density (per square kilometre)	109.7	13.4
Median Income (all census families)	$66,132	$60,455
Average Value of Owned Dwelling	$273,512	$297,479
Total # of Dwellings Owned	10,635	3,235,495
% Owned Dwellings	93%	71%
% Rented Dwellings	7%	28%

A3.6 Demographic Profile Observations

The demographic analysis of Innisfil indicates that by age category the Town is very representative of the provincial statistics. Seniors as a component of the population are also reflective of the provincial statistics and as such should be considered as a vulnerable component of the Town's population. There are a minimum number of buildings identified where the most vulnerable demographic of the community reside. These buildings should be considered as high risk with regard to developing a pro-active fire prevention and protection program. Optimizing the first two lines of defence should be considered a priority for these facilities as part of the Fire Master Plan.

English is the predominate language within the community representing 90% of the population. This indicates that there should be a very minimal language barrier in the delivery of fire prevention and public education programs.

In general income levels and the percentage of home ownership are higher than that of the provincial averages. These factors also relate to a lower percentage of rental housing compared to the provincial averages.

A4.0 GEOGRAPHY / TOPOGRAPHY / ROAD INFRASTRUCTURE

Located approximately 80 kilometres north of Toronto and within the County of Simcoe, the Town of Innisfil has the largest population of the 16 municipalities within the County. The Town is bordered by Lake Simcoe to the east, the Town of Bradford West Gwillimbury to the South, the Town of New Tecumseth and Township of Essa to the west and the City of Barrie to the north. The majority of the Town's population is spread between five larger, urban settlements and four village settlements.

Innisfil consists of both urban and rural areas with a variety of different land uses. These include agricultural, rural, natural environment, and a variety of residential, commercial, and industrial designations. The majority of future growth and development over the coming 20 years is forecast to be accommodated within settlement boundaries established around the existing settlement areas.

The Town has established an extensive Natural Heritage System containing designated Natural Environmental Areas. These lands consist of a variety of significant and non-significant wetlands, woodlands, valleylands, wildlife habitat, fisheries, 'Areas of Natural and Scientific Interest', 'Environmental Significant Areas', natural heritage links, shorelines, and water resources. Policies exist to preserve these features and their ecological functions and to limit the impact of development upon them. Water quality in Lake Simcoe and in the groundwater is a significant local issue, with restoration being a key concern. Water issues in Innisfil are regulated by the Lake Simcoe Conservation Authority and the Nottawasaga Valley Conservation Authority.

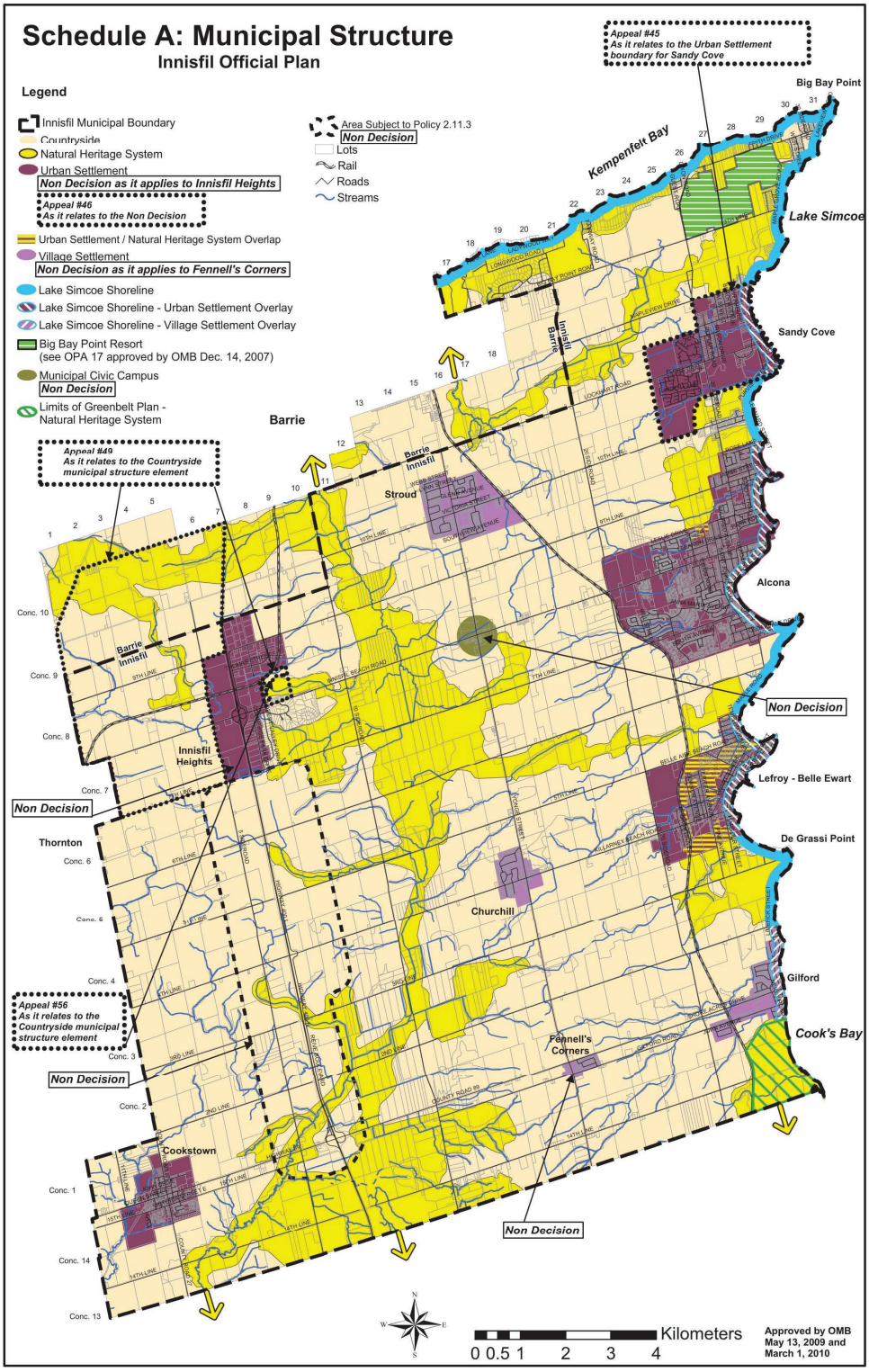
The municipal structure and existing land uses from the Town's Official Plan are included below in **Figure 1** and **Figure 2,** respectively.

The Town's transportation network includes a busy section of Provincial Highway 400 with two interchanges connecting Barrie with the rest of the Greater Toronto Area to the south. An intensive employment area is planned along this corridor. There is also a section of Highway 89 which connects Innisfil with the County of Dufferin to the west. The transportation corridors of Highways 27 and 11 also pass through the Town. Innisfil's road network integrates a number of County and Town Arterial Roads that connect the various settlement areas.

The transportation network also includes a combined CN Rail line with GO Transit service, with a preferred site for a future station identified for the provincially operated Go Transit System. Go Transit buses are available in the Village Settlements of Stroud and Churchill. No other public transportation is presently in-service within the Town.

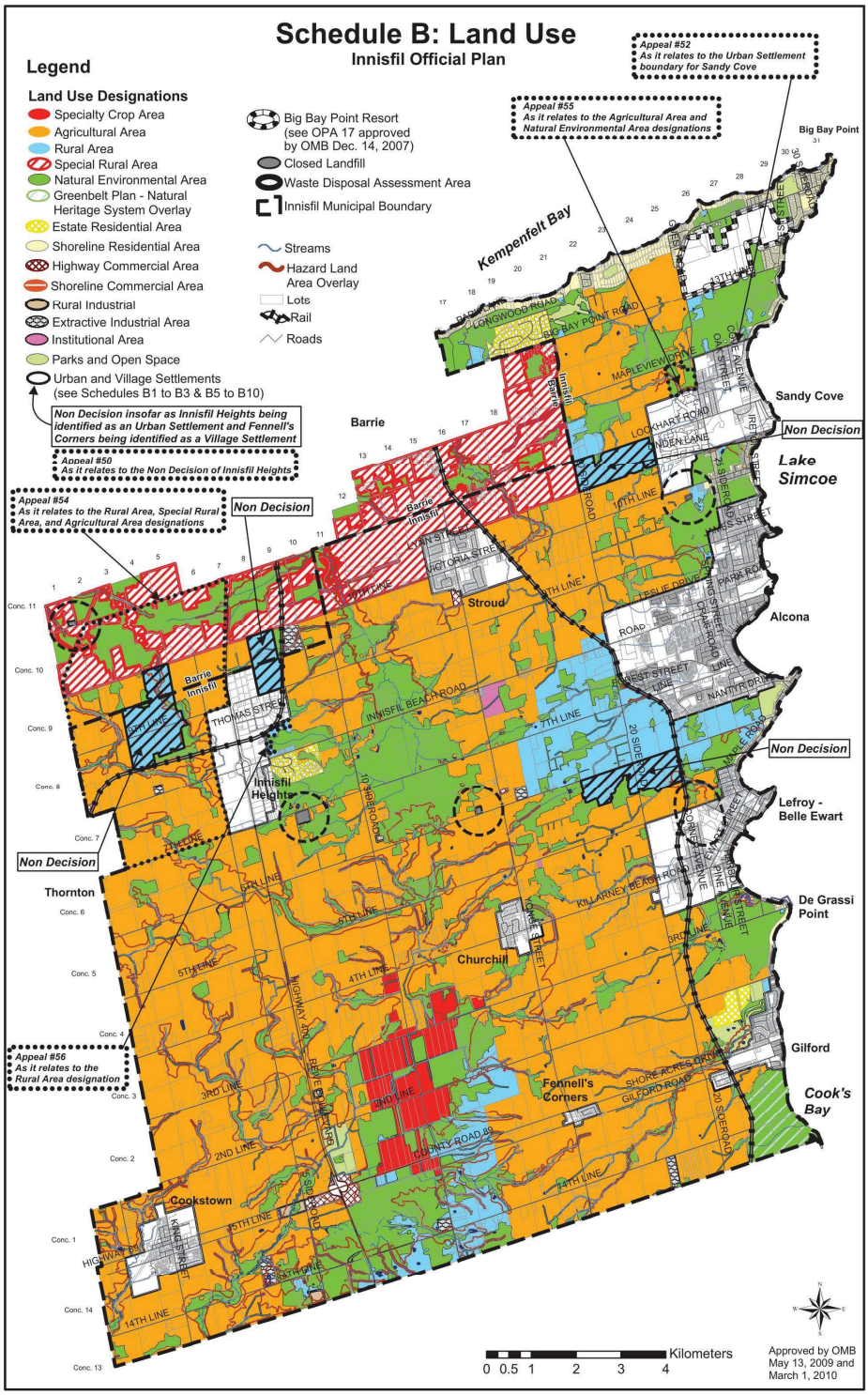
The existing and proposed transportation network is included below in **Figure 3**.

Figure 1: Town of Innisfil Municipal Structure Map



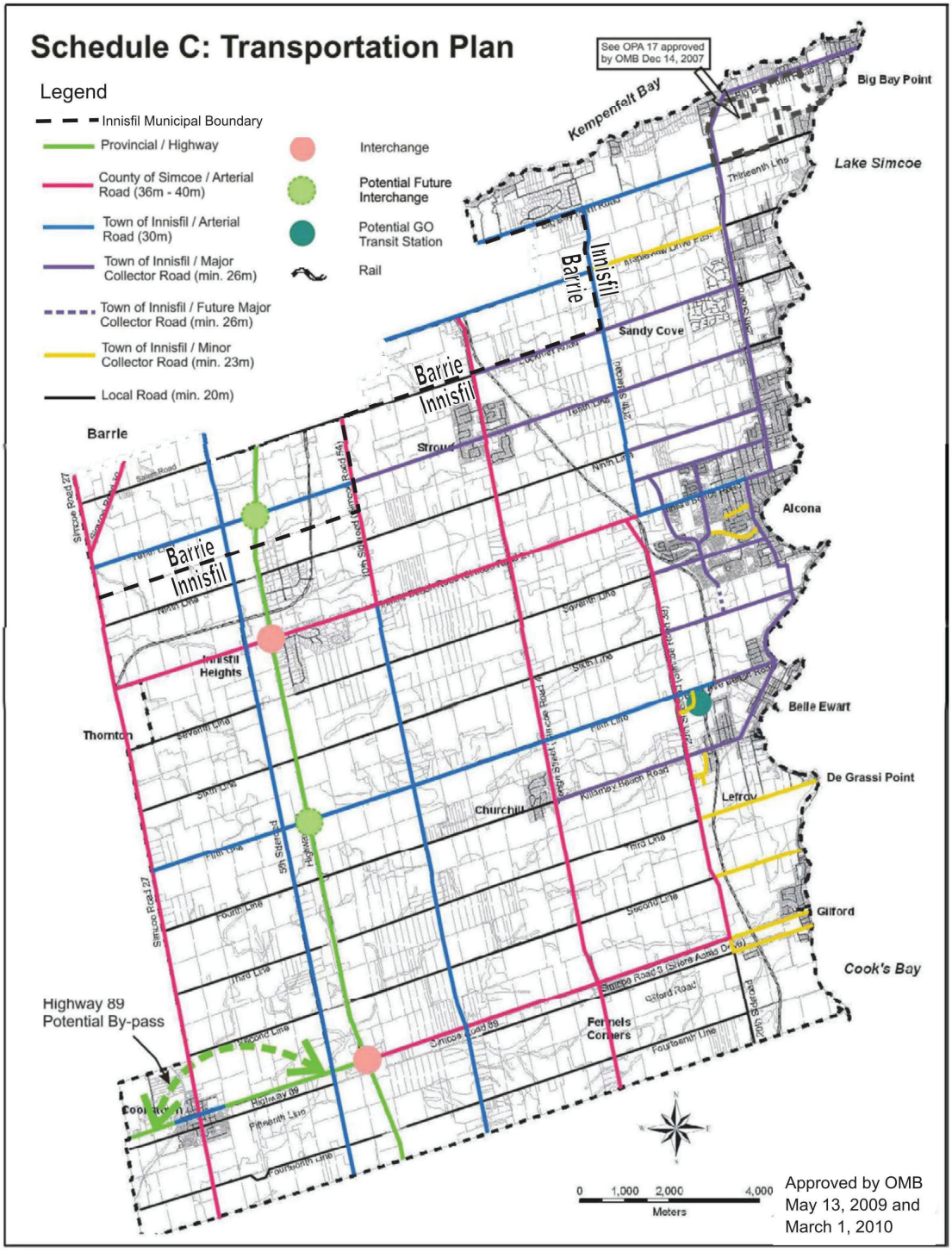
(Source: Town of Innisfil Official Plan, as approved by the OMB, 2011)

Figure 2: Town of Innisfil Land Use Map



(Source: Town of Innisfil Official Plan, as approved by the OMB, 2011)

Figure 3: Town of Innisfil Transportation Plan Map



(Source: Town of Innisfil Official Plan, as approved by the OMB, 2011)

A4.1 Geography/Topography/Road Infrastructure Profile Observations

The risks associated with the geography, topography and road infrastructure within the Town are predominantly those associated with the large overall size of the municipality and the rural residential areas located outside of the primary settlement areas. This typically results in longer emergency response times from the fire stations, located in the urban areas, out to the rural areas. In developing the Fire Master Plan consideration should be given to prioritizing the delivery of public education and fire prevention programs in these areas. This should include optimization of the department's smoke alarm program and home fire safety planning for areas with extended emergency response travel times. There are also risks associated with the recreational uses of the lake in the summer and the winter, which can lead to ice / water rescue requirements. This should be considered when assessing the services provided by the Town's Fire Rescue Services.

The road network layout is primarily a grid pattern of arterial rural roads and local roads which provide access to the urban and rural residential locations. The settlement areas within the Town are well served and connected by the road network.

The future addition of two more Highway 400 interchanges will improve access within the Town, including providing greater express options for emergency vehicles.

A4.2 Past Fire Loss Statistics

Identifying and understanding trends through the analysis of historical data provides valuable insight into community's specific trends. Assessing the key factors of life safety risk and fire risk in relation to provincial statistics provides a foundation for evaluating where specific programs or services may be necessary.

A4.2.1 *Fire Loss by Occupancy Classification*

For the period from 2007 to 2011 there were 64,757 fires within Ontario with a loss reported to the OFM. During this period 58% or 37,559 of these involved a structure and 28% or 18,132 of these fires involved a vehicle.

Table 10*:* ***Provincial Fire Loss by Occupancy Classification Period 2007 to 2011*** indicates the provincial fire loss by property classification for the period 2007 to 2011.

Table 10: Provincial Fire Loss by Occupancy Classification Period 2007 to 2011

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Ontario Fire Loss by Occupancy Classification
Group A – Assembly	*Assembly occupancies*	5%
Group B - Institutional	*Care or Detention occupancies*	1%
Group C - Residential	*Residential occupancies*	71%
Group D - Business	*Business and Personal Services Occupancies*	3%
Group E - Mercantile	*Mercantile occupancies*	4%
Group F - Industrial	*Industrial occupancies*	8%
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	8%
Reported fires	*Reported structure fires*	40,854

For this period 71% of the fires with a loss occurred within a Group C - residential occupancies.

In comparison to the provincial analysis the Town of Innisfil property loss as a result of fires is presented in ***Table 11*** below (OFM data for Innisfil). For the same period the analysis indicates that 86% of the fires reporting a loss occurred in Group C - residential occupancies.

Table 11: Town of Innisfil Fire Loss by Property Classification Period 2007 to 2011

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Town of Innisfil Fire Loss by Occupancy Classification
Group A – Assembly	*Assembly occupancies*	0%
Group B – Institutional	*Care or Detention occupancies*	2%
Group C – Residential	*Residential occupancies*	86%
Group D - Business	*Business and Personal Services Occupancies*	4%
Group E - Mercantile	*Mercantile occupancies*	2%
Group F - Industrial	*Industrial occupancies*	0%
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	6%
Reported fires	*excluding buildings under National Farm Building code (1 fires)*	50

A4.2.2 *Reported Fire Cause*

Assessing the possible cause of the fires reported is an important factor in identifying any potential trends, or areas that may be considered for introducing additional public education of fire prevention initiatives as part of the community fire protection plan.

Table 12*: Town of Innisfil 2007 to 2010 Reported Fire Cause* provides a summary of the reported possible cause of the 51 fires reported during the period 2007 to 2011 for the Town of Innisfil. (OFM data for Innisfil)

Table 12: Town of Innisfil 2007 to 2010 Reported Fire Cause

Nature	Fire Cause	Number of Fires	% of Cause
Intentional	Arson	1	2.0%
Intentional	Vandalism	0	0.0%
Unintentional	Children Playing	0	0.0%
Unintentional	Design/Construction/Maintenance deficiency	3	5.9%
Unintentional	Mechanical /Electrical failure	4	7.8%
Unintentional	Misuse of ignition source	7	13.7%
Unintentional	Other unintentional	3	5.9%
Unintentional	Undetermined	6	11.8%
Other	Other	4	7.8%
Undetermined	Undetermined	23	45.1%
Total number of fires and percentage		51	100%

There are four categories utilized to classify the cause of a fire. These include intentional, unintentional, other, and undetermined.

The "intentional" category recognizes the cause of a fire as started for a specific reason. These are typically classified as arson fires, and for example can be related to acts of vandalism, or to achieve personal gain through insurance payment. There was one arson fire reported for the period from 2007 to 2010.

The "unintentional" category recognises a number of the common causes of a fire that represent both human behavioural causes such as playing with matches, and equipment failures such as a mechanical failure. Unintentional misuse of an ignition source represents 13.7% of the cause for the 51 fires during the period from 2007 to 2012.

The cumulative percentage of "*unintentional–other unintentional (5.9%), other-other (7.8%) and undetermined-undetermined (45.1%)"* represents a total of 58.8% of all fire causes. This indicates that there was no specific cause identified for approximately 60% of all fires during this period.

A4.2.3 *Reported Ignition Source*

Table 13*: Town of Innisfil 2007 to 2011 Ignition Source Class* similarly provides the reported ignition source for the 45 fires that occurred during the period 2007 to 2011. (Source: OFM fire loss data for the Town of Innisfil).

Table 13: Town of Innisfil 2007 to 2011 Ignition Source Class

Reported Ignition Source	Number of Fires	% of Cause
Appliances	2	3.9%
Cooking equipment	3	5.9%
Electrical distribution	3	5.9%
Heating equipment chimney etc.	7	13.7%
Lighting equipment	2	3.9%
Open flame tools/smokers articles	6	11.8%
Other electrical/mechanical	2	3.9%
Processing equipment	0	0.0%
Miscellaneous	7	13.7%
Exposure	3	5.9%
Undetermined	16	31.4%
Total number of fires and percentage	51	100%

(Source: OFM historic fire loss data for Innisfil)

Undetermined ignition sources represent the largest percentage at 31.4%. Out of the main categories of determined ignition sources, heating equipment, including chimneys, woodstoves, and fireplaces were the largest percentage at 13.7%.

A4.2.4 *Reported Civilian Injuries and Fatalities*

Table 14*: Town of Innisfil 2007 to 2011 Reported Civilian Injuries and Fire Deaths* indicates the number of fire related civilian injuries and fatalities that occurred within the Town of Innisfil during the period 2007 to 2011 (OFM Data for Innisfil).

Table 14: Town of Innisfil 2007 to 2011 Reported Civilian Injuries and Fire Deaths

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Injuries	Fatalities
Group A – Assembly	*Assembly occupancies*	0	0
Group B - Institutional	*Care or Detention occupancies*	0	0
Group C - Residential	*Residential occupancies*	1	0
Group D - Business	*Business and Personal Services Occupancies*	0	0
Group E - Mercantile	*Mercantile occupancies*	0	0
Group F - Industrial	*Industrial occupancies*	0	0
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	0	0

During this period there was one reported injury as a result of a fire in a Group C residential occupancy that occurred in 2009. The cause of this injury is undetermined. No fire fatalities occurred during the time period from 2007 to 2011 in the Town of Innisfil.

A4.3 Past Fire Loss Profile Observations

Based on the historical data for the period 2007 to 2011 the Town of Innisfil experienced the highest rate of fires within the Group C - residential occupancies. This result is consistent with that of the provincial profile. The higher number of fires in residential occupancies further reflects the Town as a type of bedroom community, embedded within a small Town.

Undetermined causes representing 45.1% and misuse of an ignition source representing 13.7% were the leading causes for fires during this period. The cumulative percentage of fire causes that could not be determined represented 58.8% of the 51 fires reported during this period.

Undetermined ignition sources at 31.4%, heating equipment, including chimneys, woodstoves, and fireplaces and Miscellaneous at 13.7% each represented the three leading ignition sources of the 51 fires reported during this period.

The analysis of the past fire losses within the Town of Innisfil further defines that Group C- Residential occupancies represent the highest level of risk within the community.

Enhancing the first two lines of defence, including pro-active prevention and education programs, targeted at the areas identified within this Community Risk Profile, should be considered a priority within the Fire Master Plan.

A4.4 Fuel Load Profile

Fuel load typically refers to the amount and nature of combustible content and materials within a building. This can include combustible contents, interior finishes as well as structural materials. Combustible content tends to create the greatest potential fire loss risk. This can include industrial materials, commercial materials or typical office furnishings. Higher fuel loads results in increased fire loss risk due to increased opportunity for ignition and increased fire severity.

In many communities large amounts of fuel load can be contained within a single occupancy such as a building supply business, or alternatively within a large multi-occupancy building such a historical downtown core.

As presented previously within this report, age and construction of a building can also have an impact on fuel load given that older buildings likely have a larger volume of combustible construction such as wood framing rather than newer construction utilizing concrete and steel products.

Our analysis of fuel load within the Town of Innisfil indicates that there are a small number of buildings or occupancies where significant fuel loads are present that would be cause for any specific identification. The connected multi-occupancy structures within the downtown core present the highest amount of fuel load concentration. The Highway 400 industrial park has also been identified as a high risk location should fires occur in this area. Though many of the buildings are equipped with sprinklers, the area does have some chemical plants, lumber yards and some areas with outdoor storage. Regular fire prevention inspection cycles and strategies to enforce continued compliance with the OFC are considered as best practices to achieving the legislative responsibilities of the municipality and providing an effective fire protection program to address fuel load risks.

A4.4.1 *Fuel Load Profile Observations*

In comparison to the number of buildings within the Town of Innisfil there are a small number of buildings having a site specific fuel load concern. In addition to ensuring compliance to the requirements of the OBC and the OFC there are operational strategies that a fire department can implement to address fuel load concerns. These include regular fire inspection cycles and pre-planning of buildings of this nature to provide an operational advantage in the event of fire.

A5.0 COMMUNITY GROWTH & DEVELOPMENT

A5.1 Historic Growth

The following table indicates the historic populations within the Town of Innisfil, as provided by Statistics Canada, Census Profiles. Historic household population statistics are also included, where available.

Table 15: Historic Growth in Population and Households

Year	Innisfil Population	% Change in Population	Innisfil Population by Household	% Change in Households
1996	24,711	N/A	N/A	N/A
2001	28,666	16%	11,985	N/A
2006	31,175	8.8%	12,822	7.0%
2011	32,727	5.0%	13,797	7.6%

A5.2 Growth Projections

Table 16 summarizes the growth projections for the Town of Innisfil from 2006 to 2031.

Table 16: Population and Employment Growth Projections

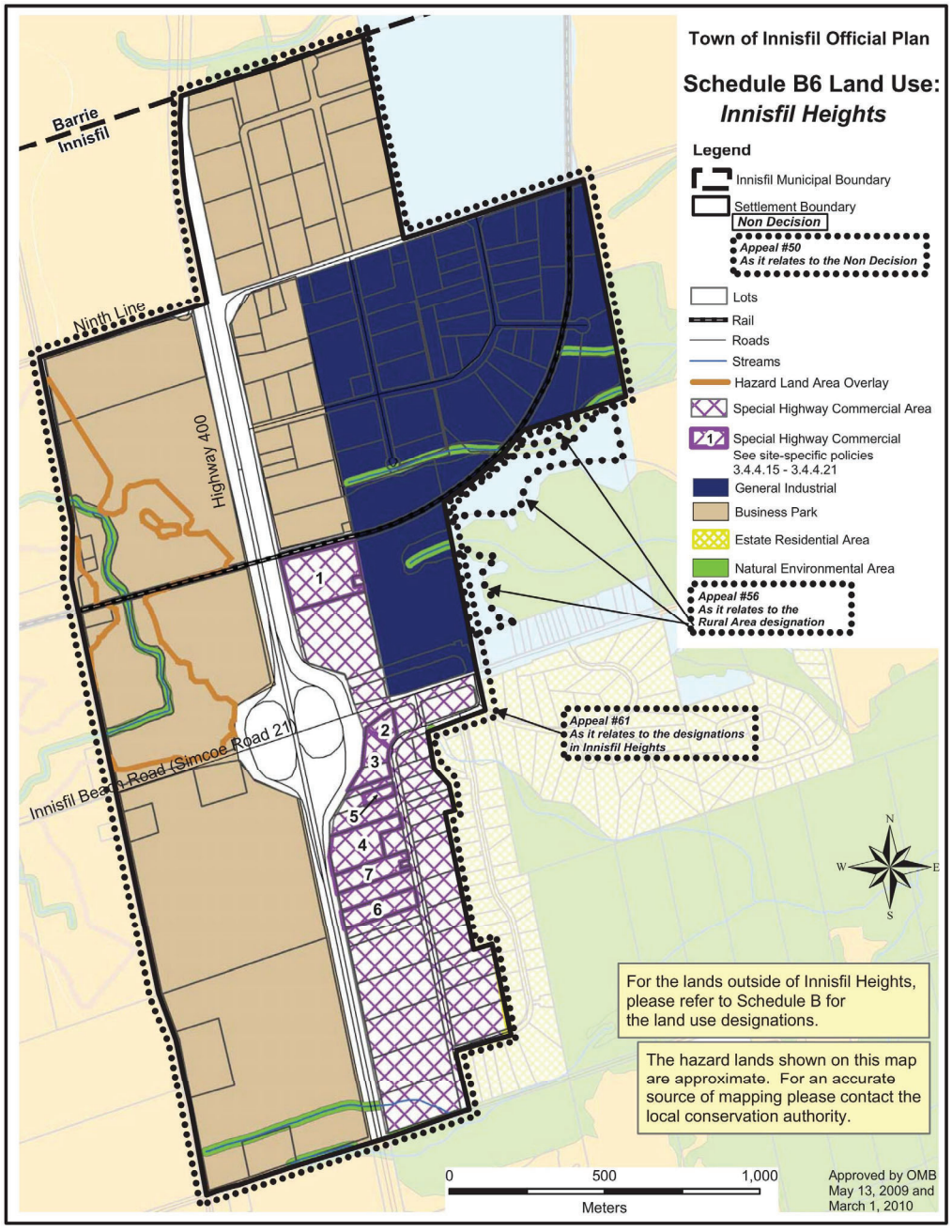
Year	2006	2011	2016	2021	2026	2031
Population	31,175	32,727	38,250	50,500	60,000	71,000
Housing Units	12,822	13,797	15,878	18,913	22,471	26,591
Employment	5,700	6,000	6,600	8,700	10,930	13,100

(Source: Town of Innisfil Planning Department - does not include Friday Harbour Development population of 5,673 people by 2031).

From 1996 to 2011 the population of Innisfil grew by 32.4%, approximately 2.16% per year. This is greater than the population growth of the province over the same time period, which was 19.5%, closer to 1% per year. The number of households in Innisfil grew by 7.6% from 2006 to 2011, compared to the provincial average of approximately 1.5% per year. The population and employment estimates shown above in **Table 16** predict that over the next 10 years the Town of Innisfil will experience rapid population growth of a 54.3% increase, representing approximately 5.4% annual growth. This growth is expected to be supported by ongoing residential development, as housing units are predicted to increase by approximately 37.1 % over the next 10 years, or 3.7% per year. This rapid rate of growth will put a strain on the fire and rescue service's resources. Resources need to be available to ensure that Innisfil Fire and Rescue Service maintain the level of service that meets the growing community needs.

Employment is predicted to increase by approximately 118.3% over the next 20 years, or 5.9% per year. This represents an extremely rapid increase in employment for the Town of Innisfil. The bulk of employment development is predicted to occur in Innisfil Heights, which is the employment zone located at Highway 400 and Innisfil Beach Road, as shown in **Figure 4.** The Town wants to further expand their employment land boundaries, which will help to accommodate the rapid growth in both population and employment. An employment expansion also has the ability to increase the ratio of jobs to residents.

Figure 4: Innisfil Heights Proposed Land Use



(Source: Town of Innisfil Planning Department)

A5.3 Growth Projections Profile Observations

The Town of Innisfil's population is anticipated to grow at a rate of 5.9% over the coming 20 year period. This represents a 54.3% population increase over the next 10 years. The expected population increase over the next 10-20 years is due to a variety of reasons including: spillover of growth from the City of Barrie due to limited land availability within the City limits, spill-over of growth from the Greater Toronto Area, and increased Ontario immigration[6]. Population and employment are expected to grow at a faster rate than housing, but there will also be rapid growth in housing, which is anticipated to increase by 92.7% over the next 20 years. This represents a housing growth of 4.6% per year.

In order to accommodate the significant population increase, new developments are occurring in the form of subdivisions. **Figure 5** illustrates new subdivisions that have either been constructed or are currently proposed and in various planning stages. The main location for residential growth has been in the urban settlement of Alcona. However, subdivisions have been proposed and/or constructed along the entire eastern boundary of the municipality, as well as smaller subdivisions located closer to Highway 400 in both Cookstown and Innisfil Heights, as shown in **Figure 5**. Approximately 3000+ units have been proposed (some already constructed), which will contribute to the increase in housing over the next 10+ years.

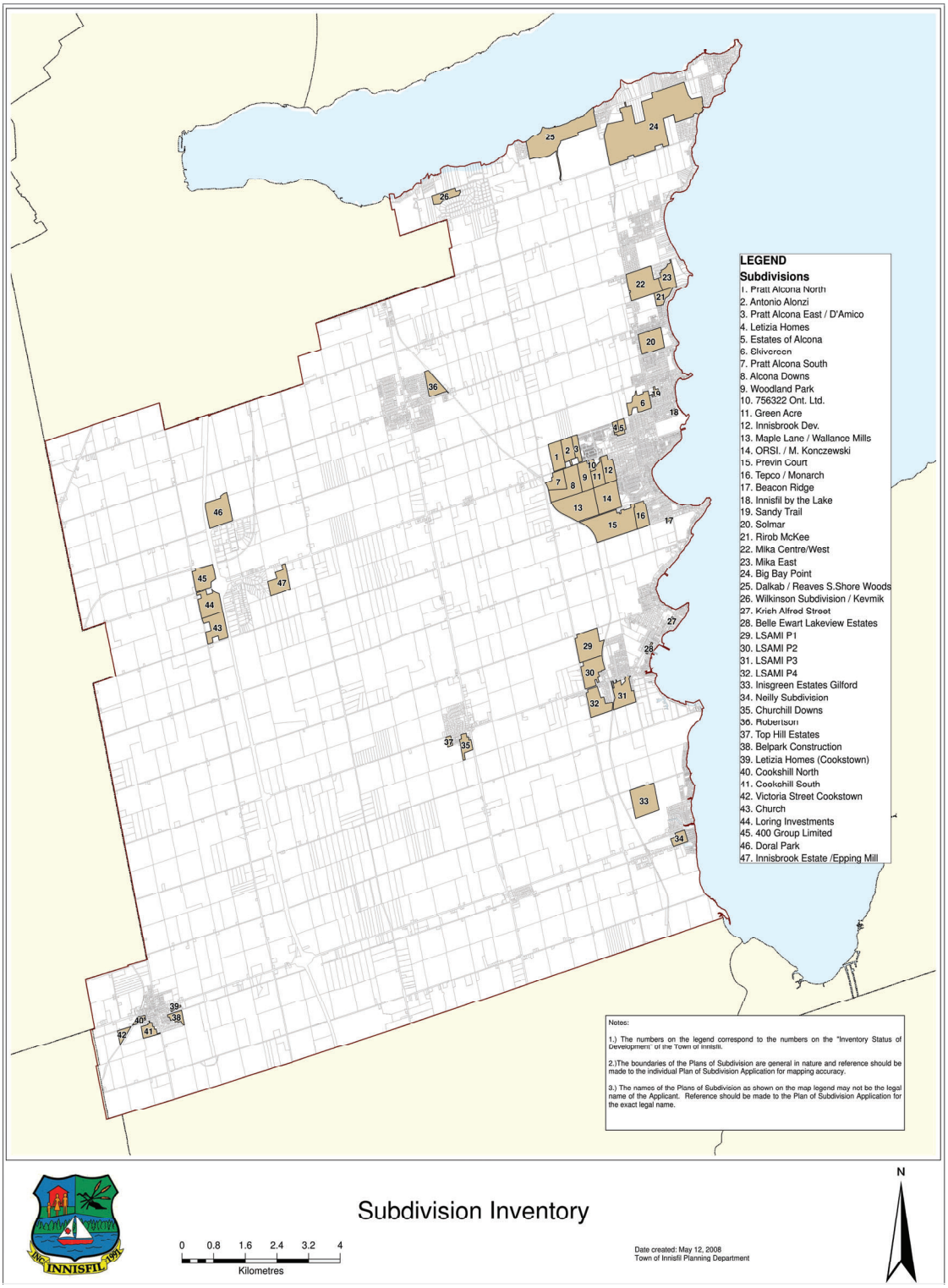
Additionally, Big Bay Point Resort is a mixed-use, recreation-based development proposed in the Town of Innisfil, located in the northeastern part of the Town, as shown in **Figure 5** (*Subdivision # 24*). The resort will be a compact, pedestrian-scaled resort development containing residential, commercial, entertainment and recreational uses. The resort will provide future housing and employment opportunities to the growing population. Specifically, when completed, it is anticipated that the resort will consist of 2,000 resort units, 1,600 resort residential units, and 8,000 square metres of integrated grade-related retail and service commercial floor area.[7]

Ultimately, the majority of new growth will occur in existing urban and village settlements. Therefore, the future geographic locations of population and employment are not expected to vary significantly within the 10 year study horizon, with the exception of the Innisfil Heights' expansion of the employment land boundaries (if approved).

[6] Source: Town of Innisfil Official Plan Review, Sorensen Gravely Lowes Planning Associates Inc., 2005

[7] Source: Town of Innisfil Planning Department, 2012

Figure 5: Subdivision Development



(Source: Town of Innisfil Planning Department)

A6.0 RISK PROFILE MODEL

The OFM Fire Risk Sub-model defines risk "*as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation. For the purposes of the Fire Risk Sub-model, such an event refers to a fire incident along with the effects of heat, smoke and toxicity threats generated from an incident".*

The OFM model develops an overall risk assessment "*by assigning probability and consequence levels to potential adverse events or scenarios due to fire and combining the two to arrive at an overall risk level".* The OFM Fire Risk Sub-model provides a matrix as one option in arriving at the level of risk for a range of scenarios.

Alternatively the model provides the opportunity "*for analysis purposes, the community being assessed can be defined as the municipality in its entirety or as a particular segment of it that distinguishes it from other parts".* The model further provides that "*it may be convenient to subdivide a municipality based on residential subdivision, downtown sections, industrial park, and a rural area."*

For analytical purposes, the methodology within this study uses the OFM Fire Risk Sub-model major occupancy classifications as the basis for segmenting the community by primary building use. Each major occupancy classification is assigned a probability level based on the OFM Fire Risk Sub-model definitions. A consequence level also using the OFM Fire Risk Sub-model definition is then assigned for each major occupancy classification.

The methodology within this report includes a further process of assigning 'weighting factor' to each of the eight risk factor categories identified by the OFM Fire Risk Sub-model. Utilizing a range from 1 (lowest) to 3 (highest) each of the factors is assigned a weight factor, to calculated a weighted average. The weight factor assigns more or less priority to each of the given factors. For example, the demographic profile that identifies the number of vulnerable residents has been assigned the highest factor weight of 3. This process results in the most relevant categories having more impact on the risk priority level calculated.

The level of risk (Priority Level) for each major occupancy classification is determined by multiplying ***"probability x consequence = risk level (priority)".*** This provides the ability to determine an overall risk level for each major occupancy classification within the community.

This methodology then coordinates the assigned risk level for each major occupancy classification with the Council approved zoning by-law information and mapping. This process provides the opportunity to create a visual model (map) of the Community Risk Profile. This provides the opportunity to view both the current and projected level of risk within the community based on the Council approved Official Plan.

Creating the Community Risk Profile Model provides the opportunity to evaluate the current level of fire protection services provided. The model can further identify where risk levels may increase or change based on growth and long-term planning of the community.

A6.1 Probability Levels

The probability of a fire occurring can be estimated in part based on historical experience of the community. The experience of other similar communities and that of the province as a whole can also provide valuable insight into the probability of a fire occurring. The experience of the evaluator and the local fire service staff in collaborating on determining probability is also a key factor.

The OFM Fire Risk Sub-model categorizes the probability of an event occurring into five levels of likelihood. ***Table 17: OFM Fire Risk Sub-model Likelihood Levels (Probability)*** identifies the OFM Fire Risk Sub-model categories.

Table 17: OFM Fire Risk Sub-model Likelihood Levels (Probability)

Description	Level	Specifics
Rare	1	- may occur in exceptional circumstances - no incidents in the past 15 years
Unlikely	2	- could occur at some time, especially if circumstances change - 5 to 15 years since last incident
Possible	3	- might occur under current circumstances - 1 incident in the past 5 years
Likely	4	- will probably occur at some time under current circumstances - multiple or reoccurring incidents in the past 5 years
Almost Certain	5	- expected to occur in most circumstances unless circumstances change - multiple or reoccurring incidents in the past year

A6.2 Consequence Levels

The consequences as a result of a fire relate to the potential losses or negative outcomes associated should an incident occur. The Fire Risk Sub-model identifies four components that should be evaluated in terms of assessing consequence. These include:

- ***Life Safety:*** Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.
- ***Property Loss:*** Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks and critical infrastructure due to fire.
- ***Economic Impact:*** Monetary losses associated with property income, business closures, downturn in tourism, tax assessment value and employment layoffs due to fire.
- ***Environmental Impact:*** Harm to human and non-human (i.e. wildlife, fish and vegetation) species of life and general decline in quality of life within the community due to air/water/soil contamination as a result of fire or fire suppression activities.

The OFM Fire Risk Sub-model evaluates the consequences of an event based on five levels of severity. **Table 18*: OFM Fire Risk Sub-model Consequence Levels*** identifies the OFM Fire Risk Sub-model categories.

Table 18: OFM Fire Risk Sub-model Consequence Levels

Description	Level	Specifics
Insignificant	1	- no life safety issue - limited valued or no property loss - no impact to local economy and/or - no effect on general living conditions
Minor	2	- potential risk to life safety of occupants - minor property loss - minimal disruption to business activity and/or - minimal impact on general living conditions
Moderate	3	- threat to life safety of occupants - moderate property loss - poses threat to small local businesses and/or - could pose threat to quality of the environment
Major	4	- potential for a large loss of life - would result in significant property damage - significant threat to businesses, local economy and tourism and/or - impact to the environment would result in a short term, partial evacuation of local residents and businesses
Catastrophic	5	- significant loss of life - multiple property damage to significant portion of the municipality - long term disruption of businesses, local employment, and tourism and/or - environmental damage that would result in long-term evacuation of local residents and businesses

A6.3 Risk Levels

Once probability and consequence are determined for each major occupancy classification the level of risk is calculated by multiplying ***"probability x consequence = risk level (priority)".*** **Table 19** identifies the four levels of risk identified within the OFM Fire Risk Sub-model including the lower and upper range of each risk classification and the relative definition of each.

Table 19: OFM Fire Risk Sub-model Risk Levels

Risk Level	Priority Level	Lower – Upper Range	Definition
Low Risk	L1	0 to 6.3	- manage by routine programs and procedures, maintain risk monitoring
Moderate Risk	L2	6.4 to 12.5	- requires specific allocation of management responsibility including monitoring and response procedures
High Risk	L3	12.6 to 18.7	- community threat, senior management attention needed
Extreme Risk	L4	18.8 to 25.0	- serious threat, detailed research and management planning required at senior levels

A6.4 Ontario Fire Code Compliance

A major determinate in assessing risk within a community and the major building classifications is compliance with the Ontario Fire Code. The Ontario Fire Code which was adopted in 1981 and the Ontario Building Code were developed to ensure uniform building construction and maintenance standards are applied for all new building construction. The codes also provide for specific fire safety measures depending on the use of the building. Examples of the fire safety issues that are addressed include:

- *occupancy*
- *exits/means of egress including signs and lighting*
- *fire alarm and detection equipment*
- *fire department access*
- *inspection, testing, and maintenance*

In 1983 the OFC was further expanded to include retrofit requirements for many of the building constructed prior to 1981. Retrofit requirements were established to ensure a minimum acceptable level of life safety is present. A number of occupancy types are included within the retrofit requirements including assembly, boarding, lodging and rooming houses, health care facilities, multi-unit residential, two-unit residential, and hotels.

Determining the status of compliance or non-compliance including the status of retrofit requirements particularly for major building occupancies is an important component of developing the Community Risk Profile. This is particularly important within the major occupancies classifications where there is a documented history of property loss as a result of fire, and/or injuries and fatalities as a result of fire. Group A – Assembly and Group B – Institutional occupancies are the two primary occupancies types where more detailed analysis of compliance and non-compliance should be considered.

Where compliance has been achieved and documented these occupancy classifications can be considered as part of the standard risk identification methodology within this report. Where compliance has not been achieved including retrofit requirements these occupancies should be evaluated independently adding a further assessment of OFC compliance.

Completing the independent evaluation provides the opportunity to assess these buildings on a case by case basis and as such does not impact the overall risk level for the occupancy classification. In the event an individual property is assigned a higher level of risk as a result of non-compliance this methodology provides the opportunity for re-evaluating the risk level for that specific property once compliance is achieved.

Group A – Assembly Occupancies – Non-Compliant OFC

All Group A - Assembly occupancies are currently in compliance with the OFC.

Group B – Institutional Occupancies – Non-Compliant OFC

Information provided by the Town indicates that all Group B – Institutional Occupancies are currently in compliance with the OFC. The care and detention centers classified within this occupancy classification can present unique challenges in the event of a fire. Utilizing the "first line of defence" including pro-active fire prevention and public education programming in addition to a regular fire inspection program to sustain compliance with the OFC is an effective strategy in managing this risk.

Group C – Residential Occupancies – Non-Compliant OFC / Vulnerable Demographics

There are a number of properties where vulnerable occupants reside either in residential or institutional occupancies (Sandycove Acres, Lakeside Retirement and Royal Oak Estates). Although these buildings are currently compliant with the OFC the profile recognizes that this demographic of the population is by experience at higher risk in the event of a fire. Utilizing the "first line of defence" including pro-active fire prevention and public education programming in addition to a regular fire inspection program to sustain compliance with the OFC is an effective strategy in managing this risk.

There is currently one non-compliant building in this occupancy. The fire rescue service is currently working with the owners of the occupancy to resolve the issue.

Group D – Commercial Occupancies – Non-Compliant OFC

Information provided by the Town indicates that all Group D - Commercial Occupancies are currently in compliance with the OFC.

Group E – Mercantile Occupancies – Non-Compliant OFC

Information provided by the Towns indicates that all Group E - Mercantile Occupancies are currently in compliance with the OFC.

Group F – Industrial Occupancies – Non-Compliant OFC

Information provided by the Towns indicates that all Group F - Industrial Occupancies are currently in compliance with the OFC. The Highway 400 industrial park has been identified as a high risk location should fires occur in this area. Though many of the buildings are equipped with sprinklers, the area does have some chemical plants, lumber yards and some areas with outdoor storage. In the middle of the industrial park there is also a flea market that has thousands of visitors every weekend. As a high risk property site specific emergency response protocols have been developed, in cooperation with the fire department.

A6.5 Town of Innisfil Risk Evaluation

Table 20 presents the completed risk evaluation for the Town of Innisfil. The evaluation utilizes the methodology described above following the framework of the OFM Fire Risk Sub-model.

The risk evaluation summary incorporates all community risk factors within the Town of Innisfil for each major occupancy classification. The summary identifies that the Town has no extreme risk occupancies. Institutional occupancies were assigned high risk. This should be reflected in the department's fire prevention and public education program planning. Assembly and residential occupancies are identified as moderate level risks. If, however, any buildings under this occupancy are non-compliant, they may be considered high risk. This would apply specifically to higher density residential units or assembly occupancies. Another consideration would be residential buildings which specifically house higher risk age-groups (e.g. seniors or vulnerable persons), which should be given a higher priority for programming based on increased risk. Business and mercantile occupancies in Innisfil represent a moderate risk.

Table 20: Risk Evaluation Summary

Community Risk Profile Factors		Property Stock	Building Height	Building Age	Building Exposures	Demographic Profile	Geography Topography	Past Fire Loss	Fuel Load	Probability[1] Level	Consequence Level	Priority Level	Risk Level
Weight Factor		*1*	*2*	*3*	*1*	*3*	*1*	*3*	*2*				
OBC Major Occupancy Classification		**Probability of an Incident**											
Group A	**Assembly**	3	2	3	2	4	2	1	2	2.4	3	7.2	RL-2
Group B	**Institutional**	4	3	4	3	5	3	1	3	3.2	4	12.8	RL-3
Group C	**Residential**	4	2	3	3	5	2	3	2	3.1	3	9.3	RL-2
Group D	**Business**	3	2	3	4	2	2	2	3	2.5	3	7.5	RL-2
Group E	**Mercantile**	3	2	3	4	2	2	2	3	2.5	3	7.5	RL-2
Group F	**Industrial**	3	2	2	2	2	2	2	4	2.3	3	6.9	RL-2
Mobile Homes & Trailers		2	1	1	1	3	2	1	1	1.5	3	4.5	RL-1

1. Pobability Level is the average of the **Weight Factor** x **Probability.**

Probability of an Incident:		**Consequence Level:**		**Priority Level**		**Risk Level**
1 – Rare		1 – Insignificant		0 to 6.2 = Low	=	RL-1 – Low Risk
2 – Unlikely		2 – Minor		6.3 to 12.5 = Moderate	=	RL-2 – Moderate Risk
3 – Possible	**X**	3 – Moderate	=	12.6 to 18.7 = High	=	RL-3 – High Risk
4 – Likely		4 – Major		18.8 to 25.0 = Extreme	=	RL-4 – Extreme Risk
5 – Almost Certain		5 – Catastrophic				

A6.6 TOWN OF INNISFIL RISK MODEL

A6.6.1 *Methodology*

This section provides a brief outline of the scope and methodology used in order to provide insight into the modeling procedures adopted to assess Town risk. A Geographic Information Systems (GIS) model was developed to assess risk based on historic call locations, risk geography, land use, the department's existing and predicted emergency response travel times relate to these risks, and the Fire Risk Sub-Model (form 100).

The basis of the GIS risk model is to develop geographical risk zones that represent areas of low, moderate, high and extreme risk categories based on land use. The Town's existing land use zoning was used to determine the boundaries and building occupancies associated with each zone. Subsequently, all building located in areas outside of the Town's official land use zoning were identified using a buildings shapefile provided by the Ministry of Natural Resources. The shapefile displays the buildings as points, thus each point/building was given a 100 metre buffer in order to approximate the building along with its corresponding property. All remaining un-zoned areas were given a land use classification of open space. Next, building occupancies were assigned to their associated land use in order to determine the base risk category (assumes that all buildings are in compliance). The base risk zones associated with each occupancy category are listed in **Table 21**. Finally, several occupancies had their risk levels up-graded or down-graded based on the Fire Risk Sub-Model (form 100).

Table 21: Base Risk Zone Category by Occupancy

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Base Risk Zone Category Assigned
Group A – Assembly	*Assembly occupancies*	*moderate*
Group B - Institutional	*Care or Detention occupancies*	*high*
Group C - Residential	*Residential occupancies*	*moderate*
Group D - Business	*Business and Personal Services Occupancies*	*moderate*
Group E - Mercantile	*Mercantile occupancies*	*moderate*
Group F1 - Industrial	*Industrial occupancies*	*low*
Group F2 - Industrial		*moderate*
Group F3 - Industrial		*high*
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	*low*

A6.6.2 *Existing Risk and Response (Town Geography)*

The GIS model was used to approximate existing geographic coverage of the existing risk zone areas. The existing station locations were represented in this scenario, shown in **Figure 6**. The GIS model was calibrated using observed fire call travel times. The travel times are represented by the buffers surrounding the fire stations (four minute travel time indicated in purple and eight minute travel time indicated in green). The calculations indicate the percentage of the various risk zone categories that fall within the estimated travel time buffer. In this figure, 62% of the high risk geography, 26% of the moderate risk geography and 18% of the low risk geography is covered within four minutes of predicted travel time. This scenario also resulted in 91% of the high risk zones, 67% of the moderate risk zones and 65% of the low risk zones being covered within the eight minute predicted travel time.

A6.6.3 *Existing Risk and Response (Call Locations)*

The existing risk zones and existing emergency response are presented in **Figure 7**. This figure also depicts the historic call locations from 2009, 2010, and 2011 fire call data overlaid onto the existing risk zones represented in the model. These calls were colour coded according to department response time (turnout time plus travel time). Calculations were carried out to estimate the number of calls within each risk zone category and the response time associated. The calculations show that for moderate risk calls, 41% are responded to in six minutes or less of response time (turnout plus travel time) and 78% are responded to in 10 minutes or less of response time (turnout plus travel time). The calculations show that for low risk calls, 25% are responded to in six minutes or less of response time and 65% are responded to in 10 minutes or less of response time. The model also indicates that 67% of calls in high risk zones are responded to in six minutes or less and 100% of calls in high risk zones are responded to in 10 minutes or less. This indicates that the majority of the calls, and specifically high risk calls, are within the 10 minute response time areas.

A6.6.4 *Future Risk and Response (Town Geography; Existing Stations and Locations)*

The model was used to approximate geographic coverage of the future risk zone areas with the existing stations and locations. Given the development that is predicted in the future, approved growth areas and secondary plans were incorporated into the risk model, shown in **Figure 8**. The methodology for this scenario was the same as for the Existing Risk and Response discussed above. In this figure, 62% of the high risk geography, 25% of the moderate risk geography, and 18% of the low risk geography is covered within four minutes of predicted travel time. This scenario also resulted in 91% of the high risk zones, 67% of the moderate risk zones and 65% of the low risk zones being covered within the eight minute predicted travel time.

A6.6.5 *Future Risk and Response (Town Geography; Relocate Station 2 and add Station 5)*

The model (shown in **Figure 9**) was used to approximate geographic coverage of the future risk zone areas with the relocated Station 2 and addition of Station 5. The methodology for this scenario was the same as for the Future Risk and Response discussed above. In this figure, 62% of the high risk geography, 34% of the moderate risk geography, and 23% of the low risk geography is covered within four minutes of predicted travel time. This scenario also resulted in 100% of the high risk zones, 87% of the moderate risk zones and 77% of the low risk zones being covered within the eight minute predicted travel time.

Travel Time	% of Low Risk Area	% of Moderate Risk Area	% of High Risk Area
4 min	18%	26%	54%
8 min	65%	67%	79%

Station 1

Station 3

Station 4

Thorton

Figure 6: Existing Risk and Response (Geograp

TOWN OF INNISFIL
FIRE MASTER PLAN

EXISTING RISK AND RESPONSE GEOGRAPHY

Legend

- Fire Stations
- Expressway
- Highway
- Major Road
- Local Road
- Municipal Boundary

Risk

- Low Risk
- Moderate Risk
- High Risk
- Extreme Risk

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 01/18/13

Travel Time	% of Low Risk Calls	% of Moderate Risk Calls	% of High Risk Calls
<= 4 min	15%	15%	0%
<= 5 min	20%	26%	33%
<= 6 min	25%	41%	67%
<= 7 min	30%	48%	67%
<= 8 min	35%	54%	100%
<= 9 min	40%	65%	100%
<= 10 min	65%	78%	100%
> 10 min	35%	22%	0%

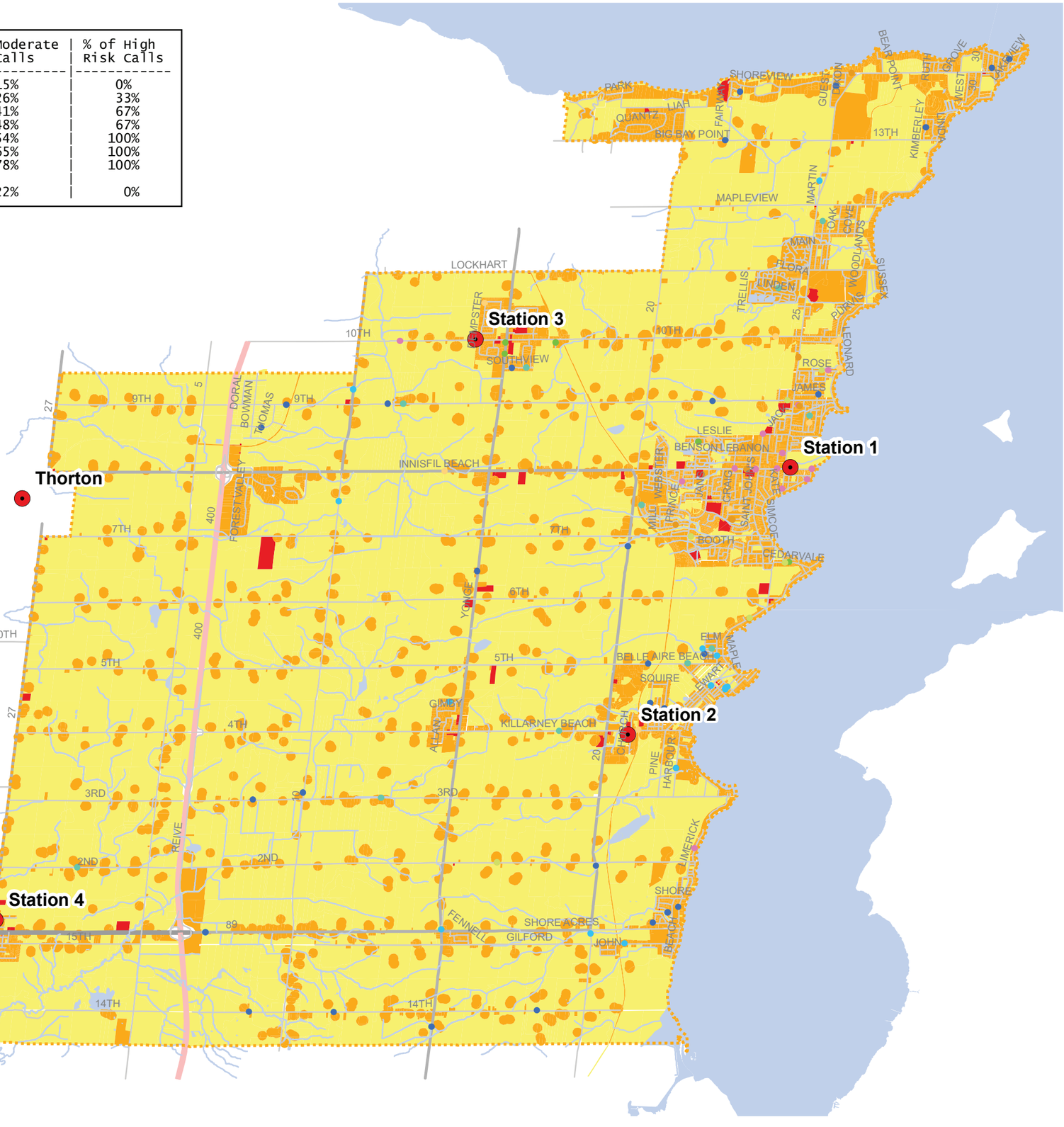


Figure 7: Existing Risk and Response (Call Locations)

TOWN OF INNISFIL
FIRE MASTER PLAN

EXISTING RISK AND
RESPONSE CALL LOCATIONS

Legend

Turnout time + travel time to call

- <= 4 minutes
- 4-5 minutes
- 5-6 minutes
- 6-7 minutes
- 7-8 minutes
- 8-9 minutes
- 9-10 minutes
- >10 minutes
- Fire Stations
- Expressway
- Highway
- Major Road
- Local Road
- Municipal Boundary

Risk

- Low Risk
- Moderate Risk
- High Risk
- Extreme Risk

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 02/20/13

Travel Time	% of Low Risk Area	% of Moderate Risk Area	% of High Risk Area
4 min	18%	25%	54%
8 min	65%	67%	79%

Station 1
Station 3
Station 4
Thorton

Figure 8: Future Risk and Response (Geograp

TOWN OF INNISFIL
FIRE MASTER PLAN

FUTURE RISK AND RESPONSE GEOGRAPHY

Legend

- Fire Stations
- Expressway
- Highway
- Major Road
- Local Road
- Municipal Boundary

Risk

- Low Risk
- Moderate Risk
- High Risk
- Extreme Risk

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 01/21/13

Travel Time	% of Low Risk Area	% of Moderate Risk Area	% of High Risk Area
4 min	23%	34%	54%
8 min	77%	87%	87%

Station 5
Station 3
Station 1
Station 2
Station 4
Thorton

Figure 9: Future Optimal Risk and Response (GeograpK

TOWN OF INNISFIL
FIRE MASTER PLAN

FUTURE RISK AND RESPONSE GEOGRAPHY
RELOCATE STATION 2 AND ADD STATION 5

Legend

- Fire Stations
- Expressway
- Highway
- Major Road
- Local Road
- Municipal Boundary

Risk

- Low Risk
- Moderate Risk
- High Risk
- Extreme Risk

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

PROJECT: 12-6085
STATUS: DRAFT
DATE: 01/21/13

APPENDIX B
Fire Suppression Performance Factors

Table of Contents

Page

List of Figures

List of Tables

BI. FIRE SUPPRESSION PERFORMANCE FACTORS

There are a number of variables to be considered by a municipal council in understanding and determining an appropriate service level for fire suppression. The variables include the type of risk (Community Risk Profile) the total response time (dispatch time, activation / turnout time, and travel time) the number of firefighters required (initial response and depth of response) and the measurement objective (the percentage of incidents that would meet an assigned objective).

The Community Risk Profile included within this study (***Appendix A***) presents a comprehensive analysis for determining fire risk, and assigning fire risk based the Ontario Building Code Major Occupancy Classifications.

For comparison purposes this study utilizes the benchmark of a fire in a 2000 square foot, two-storey single-family dwelling, without a basement and with no exposures present. This example represents a typical home of wood frame construction located in a suburban neighbourhood having access to a municipal water supply (fire hydrants). This occupancy would be classified as a Group C - Residential Occupancy (moderate risk level).

To determine a recommended fire suppression performance target this study will assess the current guidelines and standards that are being utilized by the Ontario fire service in comparison to this benchmark fire risk scenario.

BI.1 Importance of Time with Respect to Fire Growth

Time is a critical component with respect to the growth of a fire and the success of intervention by firefighters. Research conducted by the OFM and National Research Council of Canada indicates that a fire in a non-sprinklered residential occupancy (typical fire risk scenario) can spread from the room where the fire originates in ten minutes or less. Tests have shown that the fire can extend from this room of origin in as little as three minutes, under fast fire growth conditions.

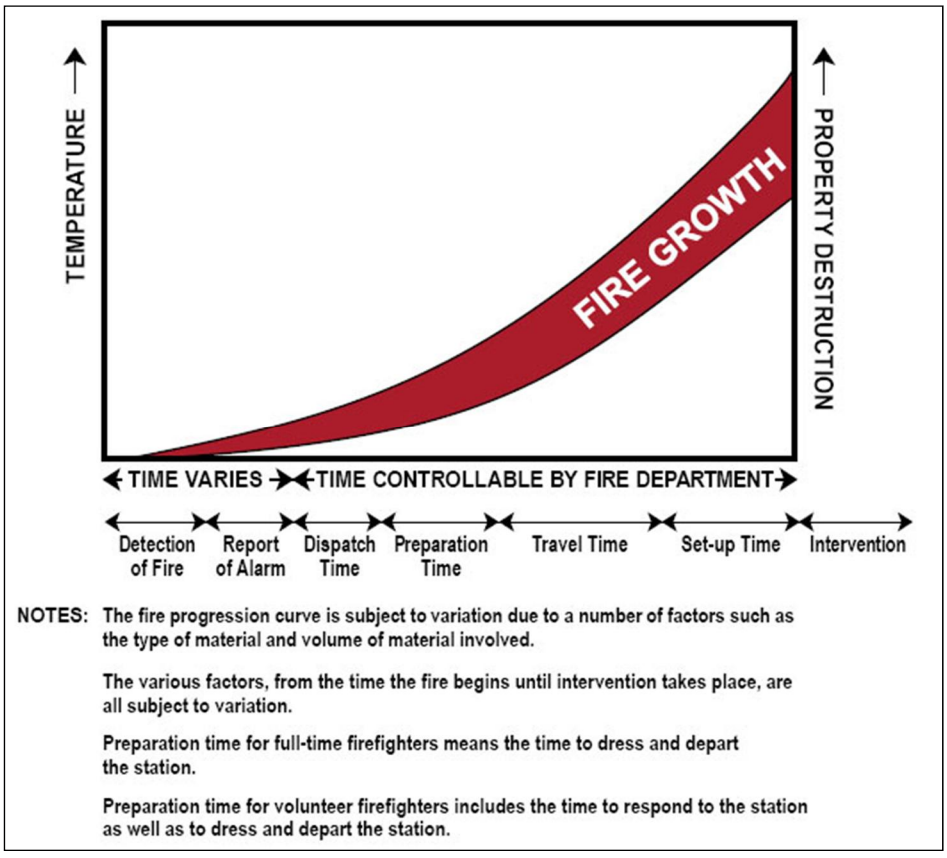
Fire growth rates, defined by the Society of Fire Protection Engineers, as slow, medium and fast are listed in **Table B1***: Fire Growth Rates as Defined by Society of Fire Protection Engineers*. The fire growth rates are measured by the time it takes for a fire to reach a 1 megawatt (MW) fire. This is roughly equivalent to an upholstered chair burning at its peak. A 2 MW fire is approximately equal to a large upholstered sofa burning at its peak.

Table B1: Fire Growth Rates as Defined by Society of Fire Protection Engineers

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 1MW***	***Time in Seconds to Reach 2 MW***
Slow	600 seconds	848 seconds
Medium	300 seconds	424 seconds
Fast	150 seconds	212 seconds
Source: Office of the Fire Marshal, Ontario, 'Operational Planning: An Official Guide to Matching Resource Deployment and Risk', January 7, 2011 (www.ofm.gov.on.ca)		

Within this ten minute time period flashover conditions can occur. Flashover occurs when the combustible items within a given space reach a temperature that is sufficiently high for them to auto-ignite. The graph in **Figure B1** highlights the importance of firefighting intervention, given the exponential increase in fire temperature, and the potential for loss of property/loss of life with the progression of time (*Courtesy of the Office of the Fire Marshal, Ontario).*

Figure B1: OFM Fire Progression Curve



The fire progression curve reflects the importance of time during the *"detection – report*" stage. This is the time period not impacted by any actions by the fire department. The time period controlled by the fire department begins when the call is initially received by "*dispatch"* and includes several other components leading up to the initiation of "*intervention*" by fire suppression staff.

Understanding factors such as "growth rate" and "time' in terms of how quickly a fire can reach a critical stage such as "flashover" are important considerations in assessing fire suppression performance targets. For example, where areas of the community may have extended response times due to long travel distances, in excess of 10 minutes, the potential for the fire to have spread from the room of origin, and or already reached a "flashover" state, will be significantly higher.

In these situations consideration should be given to the first two *"*lines of defence*"* including the provision of more public education and fire prevention activities as a means to inform the public on how to be prepared.

BI.2 Total Response Time

Measuring the total response time to an emergency call can be defined by three primary components: *dispatch time, turnout time*, *travel time*. Together these components make up the total response time it takes for a fire and emergency service to receive a call either from someone at the scene of with knowledge of the fire, identify the location of the emergency and dispatch appropriate vehicles and staff, travel to the scene of the incident, and set up to begin fire suppression activities. The common definitions of these four components are:

1. Dispatch Time: The time that it takes for the person responsible for *"alarm answering*", and "*alarm processing*" to be able to receive the call, and dispatch the appropriate apparatus and staff to respond to the emergency.
2. Turnout Time: The time interval that begins from when the emergency response staff receives the required dispatch notification, and ends at the beginning point of travel time.
3. Travel Time: The travel time interval begins when the assigned emergency response apparatus begins the en-route travel to the emergency, and ends when the apparatus arrives at the scene.

One of the important factors to recognize with regard to these times is when the responding fire department begins to take *"care and control"* of the incident. Within PFSG 04-08-12 the OFM describes this as "*Once notified of an emergency, your department accepts its "care and control". If your department handles its own call-taking and dispatching, you can see that you have care and control right from the earliest moment, when the emergency was reported. But if you hire a call-taking or dispatching or both, you do not accept care and control until sometime later. Nevertheless, the fire department has responsibility for ensuring that hired agencies manage call-taking and dispatching effectively, and in accordance with establishes protocols".*

BI.3 Initial Response

Initial response can be defined as the number of firefighters initially responding to an incident. Identifying the number of firefighters required on the initial response has been the focus of much debate within the fire service industry for many years. More recently there has been a significant shift by fire service leaders and professional standard setting bodies to recommending that an initial response of four firefighters should be considered the minimum.

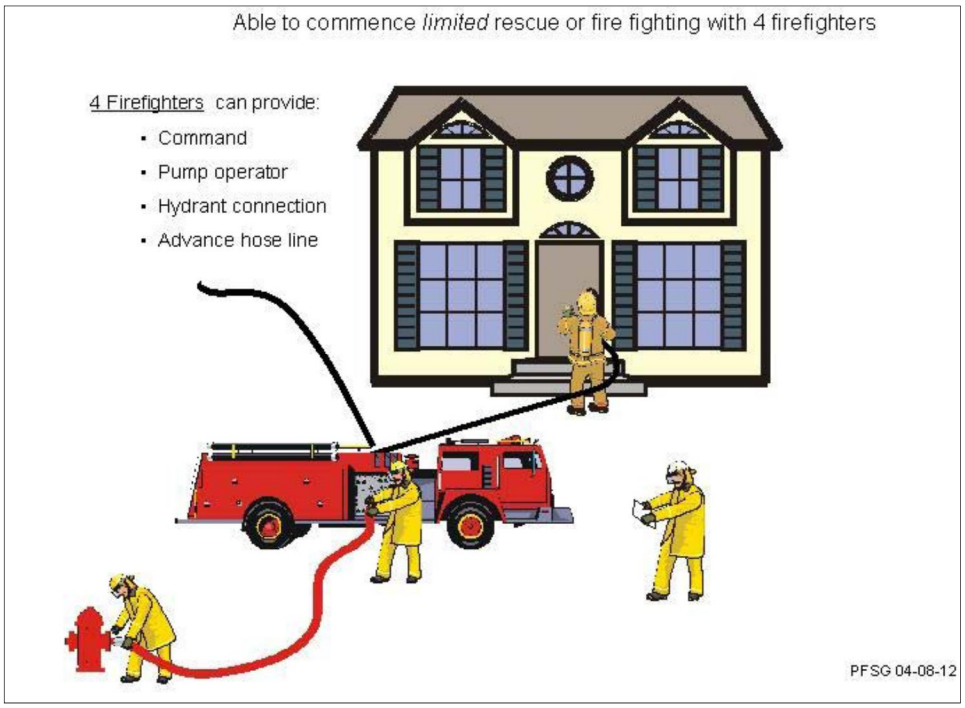
It has been acknowledged by fire service leaders and professional standard setting bodies that until a minimum of four firefighters have assembled at a fire scene, there are not sufficient firefighters on scene to safely initiate or make entry into the building to commence the rescue of occupants, or initiate interior fire suppression operations. If fewer than four firefighters arrive on scene, they must wait until a second vehicle, or additional firefighters arrive to have sufficient staff to commence these activities.

An initial response of four firefighters once assembled on the scene is typically assigned the following operational functions. The Officer in charge shall assume the role of Incident Command; 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.

Under the direction of the Incident Commander the initial response crew then has the option of initiating limited search and rescue (i.e. looking for trapped persons immediately inside doorways or windows) or beginning limited firefighting using two firefighters for either task.

Fire scene responsibilities are highlighted in **Figure B2** below.

Figure B2: First Response Fire Scene Responsibilities



(Office of the Fire Marshal, Ontario, Prior to November 2010).

BI.4 Depth of Response

In comparison to the Initial Response the depth of response relates to the "total" number of firefighters initially assigned to an incident. Depth of response is also commonly referred to as "First Alarm" or "Full Response". For example NFPA 1710 defines "*Initial Full Alarm Assignment"* as *"Those personnel, equipment, and resources ordinarily dispatched upon notification of a structure fire".*

It is very important to recognize that depth of response is referring to the "total" number of firefighters **initially** assigned to an incident. The total number of firefighters assigned to an incident can vary based on the type of occupancy and the level of risk present. Fires involving occupancies that have been assigned a higher level of risk such as high, or extreme may require a higher number of firefighters as part of the initial depth of response. This can be achieved in many ways such as dispatching of additional resources or the use of Fire Protection Agreements (Automatic Aid Agreements).

In comparison to best practices within the industry that recognize four firefighters as the appropriate level of resources for the initial response, determining best practices for depth of response has a number of variables to be considered.

Depth of response is assessed below for the OFM guidelines and the NFPA standards in comparison to the typical fire risk scenario presented.

BI.5 OFM Public Fire Safety Guidelines

As identified in the *Fire Protection and Prevention Act, 1997,* the Office of the Fire Marshal, Ontario (OFM) has the power to issue guidelines to municipalities with respect to fire protection services and related matters. These *Public Fire Service Guidelines* (PFSG) are to be used by local municipalities to determine the level of fire protection services they determine may be necessary, in accordance with their particular needs and circumstances.

PFSG 04-08-10 *Operational Planning: An Official Guide to Matching Resource Deployment and Risk* was released by the OFM in January 2011. Utilizing the risk evaluation and determination process identified with the Fire Risk Sub-model this PFSG contains a "Critical Task Matrix". The matrix is defined by the OFM 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".*

The Critical Task Matrix provides 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 *Occupational Health and Safety Act Section 21 Guidance Notes* affecting firefighters, and industry best practices.

The Critical Task Matrix identifies a range of 16 to 43 firefighters that would be required to respond to a moderate level risk that is comparable to the typical fire risk scenario presented above. The matrix recognizes that the actual number of firefighters required may vary depending on the fire risk that exists and the tasks that are assigned by the Incident Commander on the scene. The matrix does not specify the number of firefighters recommended for an initial response, it only looks at the suggested depth of response resources.

The matrix for the fire risk scenario presented (moderate risk) suggests a firefighter is required for both "Water Supply – pressurized" as well as "Water Supply – non –pressurized". As the fire risk scenario identifies a municipal water supply with fire hydrants is available only one of these firefighters would be required based on the lower range level of sixteen.

The matrix also identifies that "Utilities" would require a firefighter for this fire risk scenario. In our experience this is a function that can be coordinated by the Incident Commander either by the multi-tasking of other firefighters on scene, or alternatively by utilizing staff from the agencies directly responsible for the utilities to mitigate any issues.

Modifying the lower level of the moderate risk range by reducing the number of firefighters by two; and revising these two tasks would suggest that a minimum response of fourteen firefighters responding to the fire risk scenario presented within this study would be an acceptable minimum performance target.

BI.6 National Fire Protection Association (NFPA) 1710 Standard

The National Fire Protection Association (NFPA) is an international non-profit organization that was established in 1896. The company's mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. With a membership that includes more than 70,000 individuals from nearly 100 nations NFPA is recognized as one of the world's leading advocates of fire prevention and an authoritative source on public safety.

NFPA is responsible for 300 codes and standards that are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation in the United States, as well as many other countries. Its more than 200 technical code and standard development committees are comprised of over 6,000 volunteer seats. Volunteers vote on proposals and revisions in a process that is accredited by the American National Standards Institute (ANSI).

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"* provides a resource for determining and evaluating the number of career firefighters required based upon recognized industry best practices.

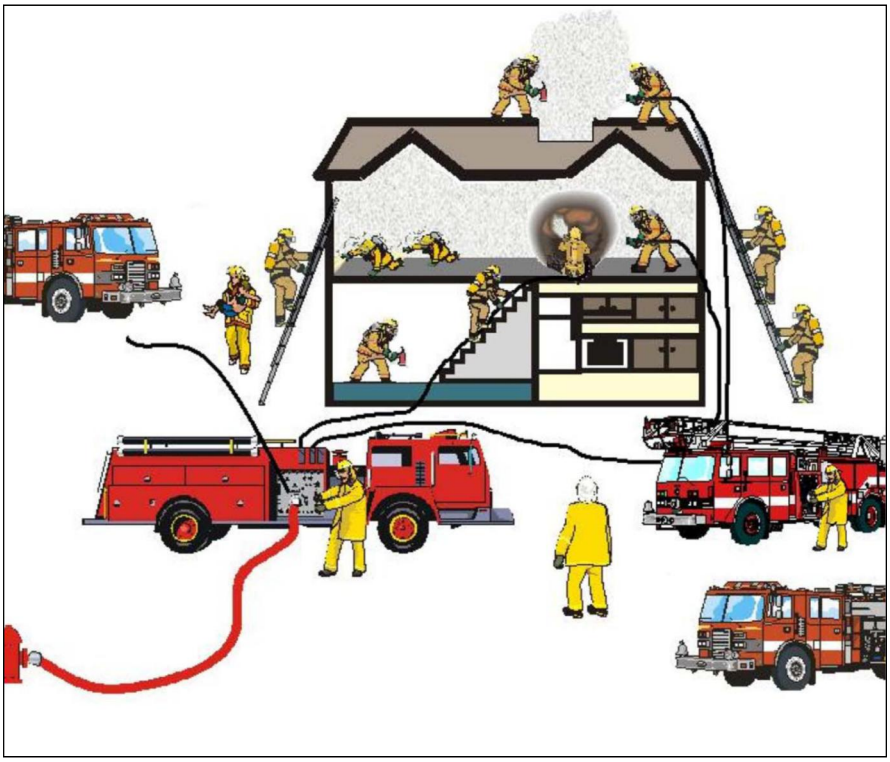
NFPA 1710 is a standard that is designed for larger municipalities that as a result of many factors are operating their fire department utilizing substantially career firefighters. Relevant references from NFPA 1710 include the following:

- This standard applies to the deployment of resources by a fire department to emergency situations when operations can be implemented to save lives and property.
- The standard is a benchmark 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 incidents.

The NFPA references support the strategic priority of saving lives and property, as well as recognising the standard as a "*benchmark"* for determining the appropriate level of resources based on the complexity and level of risk present.

The NFPA 1710 standard for the initial response of four firefighters is widely accepted as the minimum initial response and best practice within the industry. The NFPA 1710 standard for depth of response to the same typical fire risk scenario is fourteen firefighters, fifteen if an aerial device is to be used. The NFPA 1710 fire scene responsibilities for depth of response including an aerial are highlighted in **Figure B3**.

Figure B3: Depth of Response Fire Scene Responsibilities



BI.7 National Fire Protection Association (NFPA) 1720 Standard

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 a resource for determining and evaluating the number of volunteer firefighters required based upon recognized industry best practices.

The NFPA 1720 standard further supports the minimum 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 further 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. The standard then identifies a minimum level of firefighters that would be recommended for each of these categories. **Table B2** presents the NFPA minimum staffing levels by category.

Table B2: NFPA 1720

Demand Zones	Demographics	Minimum # of Firefighters Responding	Response Time (Turnout + Travel) in Minutes
Urban Area	>1000 people per square mile	15	9
Suburban Area	500-1000 people per square mile	10	10
Rural Area	<500 people per square mile	6	14
Remote Area	Travel Distance + or – 8 miles	4	Dependent upon travel distance
Special Risks	To be determined by Fire Department	To be determined by Fire Department	Determined by Authority Having Jurisdiction

The NFPA 1720 standard utilizes population density as a factor in evaluating the minimum number of firefighters recommended for depth of response. As a standard primarily for use by volunteer fire departments it recognizes lower population densities are typically found in smaller communities in comparison to much higher population densities found in large urban centres.

BI.8 Comparison of Emergency Response Performance Measures

In addition to the minimum staffing levels for the initial response and the depth of response, identifying options for performance targets (service levels) must also consider criteria for the overall response time and in terms of evaluation, the targeted percentage of achievement.

Table B3 provides the summary of the OFM PFSG 04-08-10 and NFPA 1710 & 1720 standards for initial response and depth of response to the typical fire risk scenario presented within this report. For this comparison travel time represents *"The travel time interval begins when the assigned emergency response apparatus begins the en-route travel to the emergency, and ends when the apparatus arrives at the scene"*. The objective represents the percentage of the total number of calls responded to by a fire department.

Table B3: Comparison to the Typical Fire Risk Scenario

Source	Initial Response	Travel Time	Depth of Response	Travel Time	Objective
OFM PFSG 04-08-10	---	---	**14 firefighters	---	---
NFPA 1710	4 firefighters	4 minutes	14 firefighters	8 minutes	90%
*NFPA 1720	4 firefighters	---	10 firefighters	10 minutes	80%

*NFPA 1720, suburban area, 500-1000 people per square mile

** This includes adjustments for water supply and external agencies

BI.9 Summary of Fire Suppression Performance Targets

In our view the framework for identifying community risk and deploying sufficient firefighting resources to address the community risk present is accurately presented in PFSG 04-08-10 *Operational Planning: An Official Guide to Matching Resource Deployment and Risk*. Within these analyses of fire suppression performance factors we have included consideration of the staffing deployment of PFSG 04-08-12 as well as the relevant NFPA Standards.

For comparison purposes this assessment utilizes the example of a fire risk scenario in a 2000 square foot, two-story single-family dwelling without a basement and with no exposures present. This represents a typical home of wood frame construction located in a suburban neighbourhood having access to a municipal water supply including fire hydrants. Within this study this occupancy would be classified as a Group C - Residential Occupancy (moderate risk).

In our view best practices within the Ontario fire service to address firefighter health and safety, and the operational tasks associated with the fire risk scenario presented reflect a staff deployment of four firefighters arriving on the same apparatus or alternatively arriving on scene simultaneously for the initial response, and fourteen firefighters deployed for a depth of response.

For responses to fire risks with a high or extreme risk level additional firefighting staff deployment should be automatically dispatched. This can be achieved by deploying other apparatus, stations or through automatic aid and fire protection agreements with other communities.

Determining an appropriate travel time performance target for both the initial response and depth of response is the second major component of determining fire protection service levels. PFSG 04-08-12 does not contain a specific performance target for travel time in comparison to those in NFPA 1710 and 1720. Travel times for emergency response vehicles can be impacted by many factors such as traffic congestion, traffic management systems including traffic lights and stop signs, and extended travel times due to converge of large geographic areas.

In our view identifying a travel time target should include consideration of the overall community fire protection plan including optimization of the first two lines of defence. Emphasis should also be placed on the importance of time with respect to the potential of fire growth and extension form the area or room of origin. For example, the presence of residential sprinklers would have a positive effect on the control and containment of the fire and allow for consideration of extended travel times.

In summary, identifying travel time performance targets should be a decision considered by Council in response to the Community Fire Risk Profile, and community needs and circumstances as defined by the FPPA.

APPENDIX C
Public Consultation Materials

Innisfil Fire Master Plan

WELCOME

Innisfil Fire and Rescue Services welcomes you to this Community Information Open House.

We would like to hear what you think about this Fire Master Plan study and invite you to ask us questions and provide us with your comments. Please fill in a comment sheet provided and place in the box on the table or fax/email your comments on or before Friday October 12th, 2012.

The Town of Innisfil has undertaken a Fire Master Plan Study to review municipal fire protection services and develop a 10 to 20-year master plan to guide the fire and rescue service as Innisfil continues to grow, develop and evolve.

The study will review the following department components:

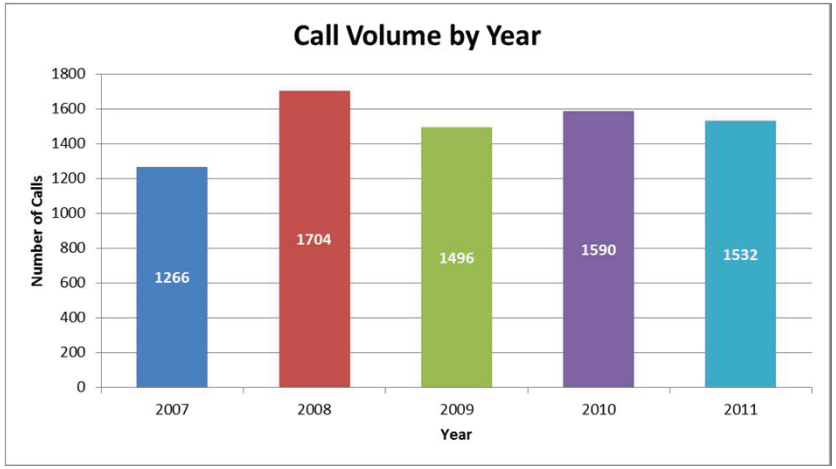
- **Administration**
- **Fire Prevention**
- **Public Education**
- **Training**
- **Staffing and Agreements**
- **Station Locations**
- **Emergency Response**
- **Emergency Planning**
- **Mechanical, Apparatus and Equipment**

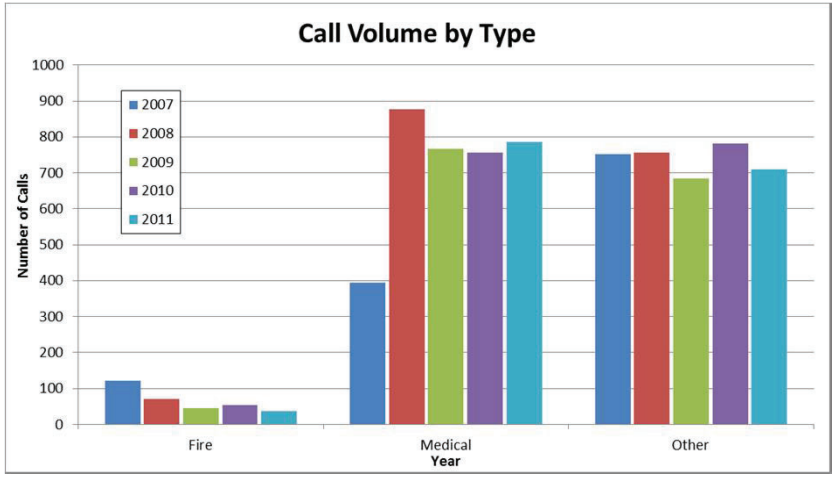
Innisfil Fire Master Plan

ONTARIO FIRE SAFETY & PROTECTION MODEL:
THREE LINES OF DEFENSE

1. **Public Education and Prevention**
   Smoke Alarm Program, school and seniors education, fire escape planning, risk management, etc.
2. **Fire Safety Standards and Enforcement**
   Inspections, occupancy inspections, licensing approval, violation enforcement, fire investigations, etc.
3. **Emergency Response**
   - Office of the Fire Marshal Ontario (OFM) Public Fire Safety Guidelines
   - National Fire Protection Association (NFPA) Standards
   - Ministry of Labour (Section 21 Guidance Notes)
   - Industry Best Practices

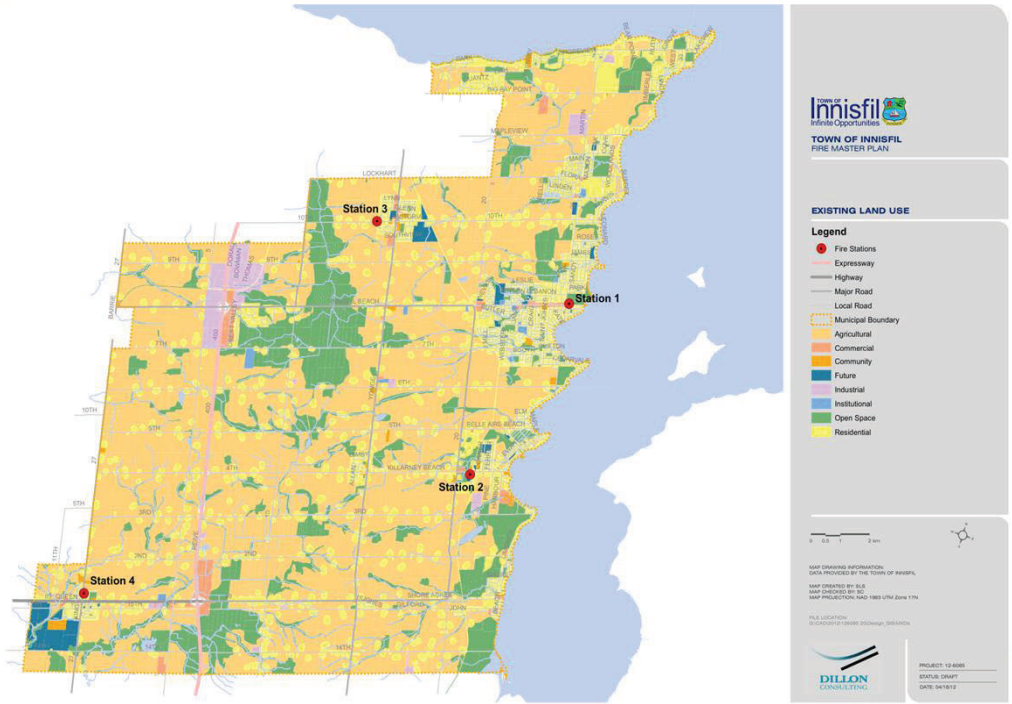
RESPONSE STATISTICS

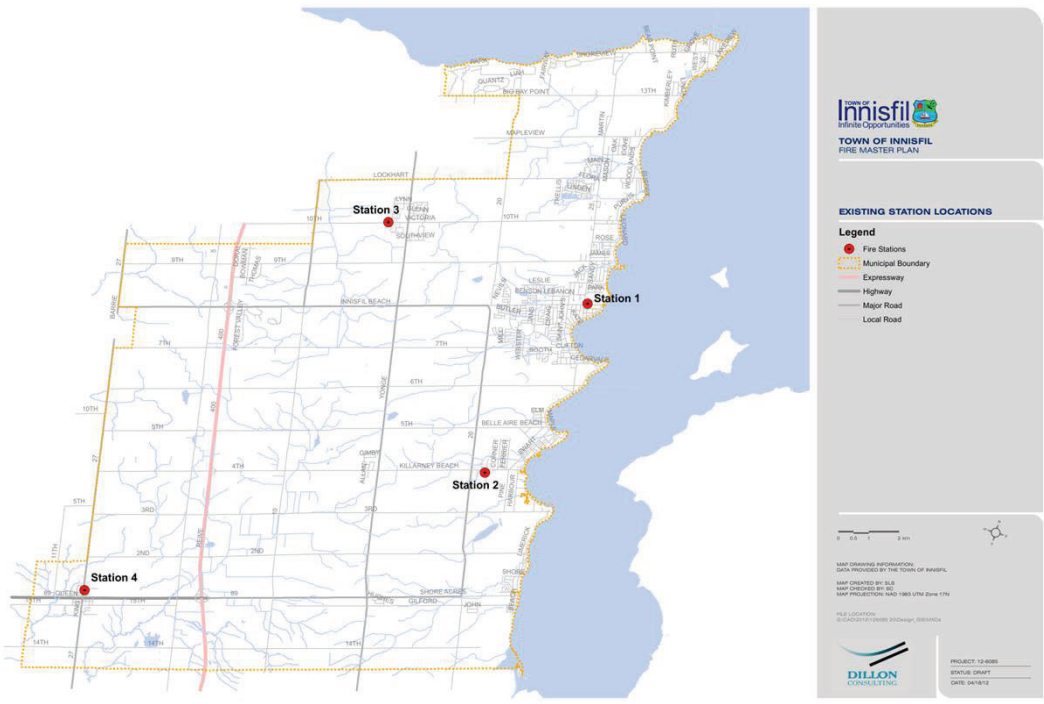




Innisfil Fire Master Plan

BACKGROUND INFORMATION / EXISTING CONDITIONS





Town of Innisfil

- Population of approximately 33,000
- Includes the Communities of Cookstown, Alcona, Stroud, Lefroy, Churchill, Fennell's Corners, Innisfil Heights, Gilford and Sandy Cove
- Predominantly rural and agricultural surrounding community centres
- Experiencing residential infill development and growth as a result of its proximity to Barrie and the Greater Toronto Area
- Experiencing commercial and industrial growth (Highway 400 corridor)

Innisfil Fire and Rescue Service

- Composite fire department (full-time & volunteer firefighters)
- Administration staff: Fire Chief, Deputy Fire Chief and Administrative Coordinator
- Fire Prevention & Public Education staff: Fire Prevention Officer
- Suppression staff includes:
  - 12 full-time firefighters; and
  - 96 volunteer firefighters.

Mission Statement

"The Innisfil Fire and Rescue Service mission is to serve the citizens of the Town of Innisfil, protecting life and property from fire, hazards, and other emergencies through accredited emergency response training, aggressive public education and fire code enforcement."

Innisfil Fire Master Plan

NEXT STEPS

- Consideration of stakeholder and public feedback
- Finalize divisional assessments
- Finalize recommendations, implementation plan and draft report
- Present Draft Fire Master Plan to Steering Committee

Public Input:

- Are you satisfied with the level of service provided for the following?
  - Residential, commercial and/or industrial areas (emergency response, etc.)
  - fire prevention initiatives (inspections, pre-planning, etc.)
  - public education events, programs and information
  - medical call responses
- Do you have any specific concerns related to the fire and rescue service?
- Do you have any ideas how service delivery could be improved?

WE THANK YOU FOR YOUR PARTICIPATION

Please fill in a comment sheet provided and place in the box on the table or fax / email your comments on or before *October 12, 2012*.

Innisfil Fire Master Plan

Community Information Open House

September 29, 2012

Presented by

Steve Thurlow & Suzanne Charbonneau

What is a Fire Master Plan?

- ✓ Comprehensive evaluation of Innisfil Fire and Rescue Services' operations, staffing and current service delivery.
- ✓ An assessment of the current services in relation to legislated standards and best practices.

- ✓ Strategic planning framework to guide policy, organizational, capital and operational decisions and ensure that current and future needs are met in a fiscally and politically feasible and responsible manner.

Benefits of a Fire Master Plan

- ✓ Provide Council & staff with a strategic template for delivering fire & emergency services in response to population and municipal growth over the next 10 to 20 years.
- ✓ Ensure Town is addressing legislated responsibilities / requirements.
- ✓ Opportunity for stakeholders to participate in developing service level performance targets and measures.

Source: innisfil.ca

Who is Involved in the Fire Master Planning Process?

- ✓ **Steering Committee**:
  - Fire Chief
  - Deputy Fire Chief
  - Fire Prevention Officer
  - Mayor
  - CAO
  - Director of Finance
  - Director of Human Resources
  - Manager of Land Use Planning
  - Association President
  - Volunteer Firefighter Representative
- ✓ **Town of Innisfil Council**
- ✓ **Stakeholders:**
  - Town staff
  - Full-time Firefighters
  - Volunteer Firefighters
- ✓ **Members of the Community**
- ✓ **Consultant Project Team**

Municipal Responsibilities

Fire Protection and Prevention Act 1997 (FPPA) states that every municipality shall:

(a) Establish a program for public education with respect to fire safety and certain components of fire prevention; and

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

(a) Establish pubic education program

At a minimum this should include:

- ✓ Simplified Risk Assessment – to identify the extent of other fire protection services.
- ✓ A smoke alarm program.
- ✓ Fire safety education activities distributed to residents/occupants.
- ✓ Inspections upon complaint or when requested to assist with code compliance.

(b) Provide other fire protection services

Services should include:

- ✓ Identifying the level of fire protection (suppression) services the municipality deems necessary based on its own "needs and circumstances".
- ✓ Determining this through evaluating factors such as: fire risk, liability, financial capabilities, resources, and community and council expectations.

Ontario Fire Safety & Protection Model

Three Lines of Defence:

1. **Public Education and Prevention**
   i. Smoke Alarm Program, school and seniors education, risk management, etc.
2. **Fire Safety Standards and Enforcement**
   i. Inspections, Occupancy Inspections, Licensing Approval, Violation Enforcement, Fire Investigations, etc.
3. **Emergency Response**
   i. Ontario Fire Marshal's Office Guidance Notes
   ii. National Fire Protection Association Standards (NFPA)
   iii. Ministry of Labour (Section 21 Guidance Notes)
   iv. Industry Best Practices

Study Approach

Phased Work Plan Summary

- ✓ *Phase 1: Project Initiation, Site Visit and Data Collection*
- ✓ *Phase 2: Non-Suppression Operations Review and Supression Operations Review*
- ✓ *Phase 3: Recommendations and Implementation*
- ✓ *Phase 4: Public Consultation*
- ✓ *Phase 5: Project Meetings, Presentations and Deliverables*
- ✓ *Phase 6: Project Management and Communication*

Interim Progress

- ✓ FPO relocated to Headquarters
- ✓ Tracking and collecting additional statistical information
  - Firefighter training
  - Training attendance
- ✓ Finalized new agreement with Barrie to provide communication services
- ✓ Participate in live fire training
- ✓ Submitted applications for infrastructure grants

Preliminary Observations

- ✓ New management team
  - Fire Chief
  - Deputy Chief
- ✓ In transition to new records management software program (Firehouse)
- ✓ Headquarters space / office / storage limitations
- ✓ Aging facilities / amenities

Preliminary Observations

- ✓ Current FPO filling many roles:
  - Inspector
  - Public Educator
  - Investigator
  - Plans Reviewer
  - Incident Safety Officer
- ✓ Absence of a formal inspection cycle (Council approved)
- ✓ Challenge to maintain inspection level
- ✓ Challenge to expand / enhance public education programs

Preliminary Observations

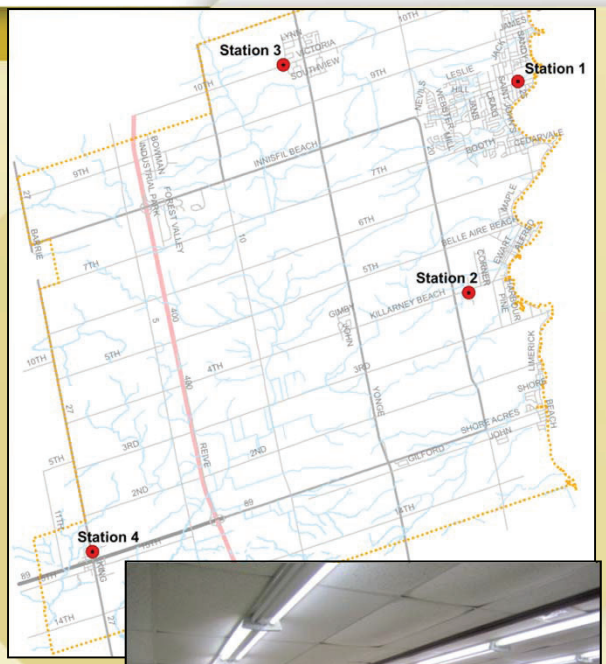
- ✓ Challenge to coordinate and deliver required training programs / time constraints
- ✓ Manage training records management
- ✓ New training attendance requirements:
  - current high turnover
  - reduction of inactive staff
- ✓ Recruitment and retention of volunteer firefighters
- ✓ Ability to provide live fire training – annually
- ✓ Officer Training Program
- ✓ Specialized training (Aerial Truck)

Preliminary Observations

- ✓ Consider revising tiered response agreement to ‘B level’
- ✓ Dispatch services agreement with Barrie Fire and Emergency Services (switching from South Simcoe Police)
- ✓ Automatic aid considerations in emergency response model (Barrie, Essa, New Tecumseth)

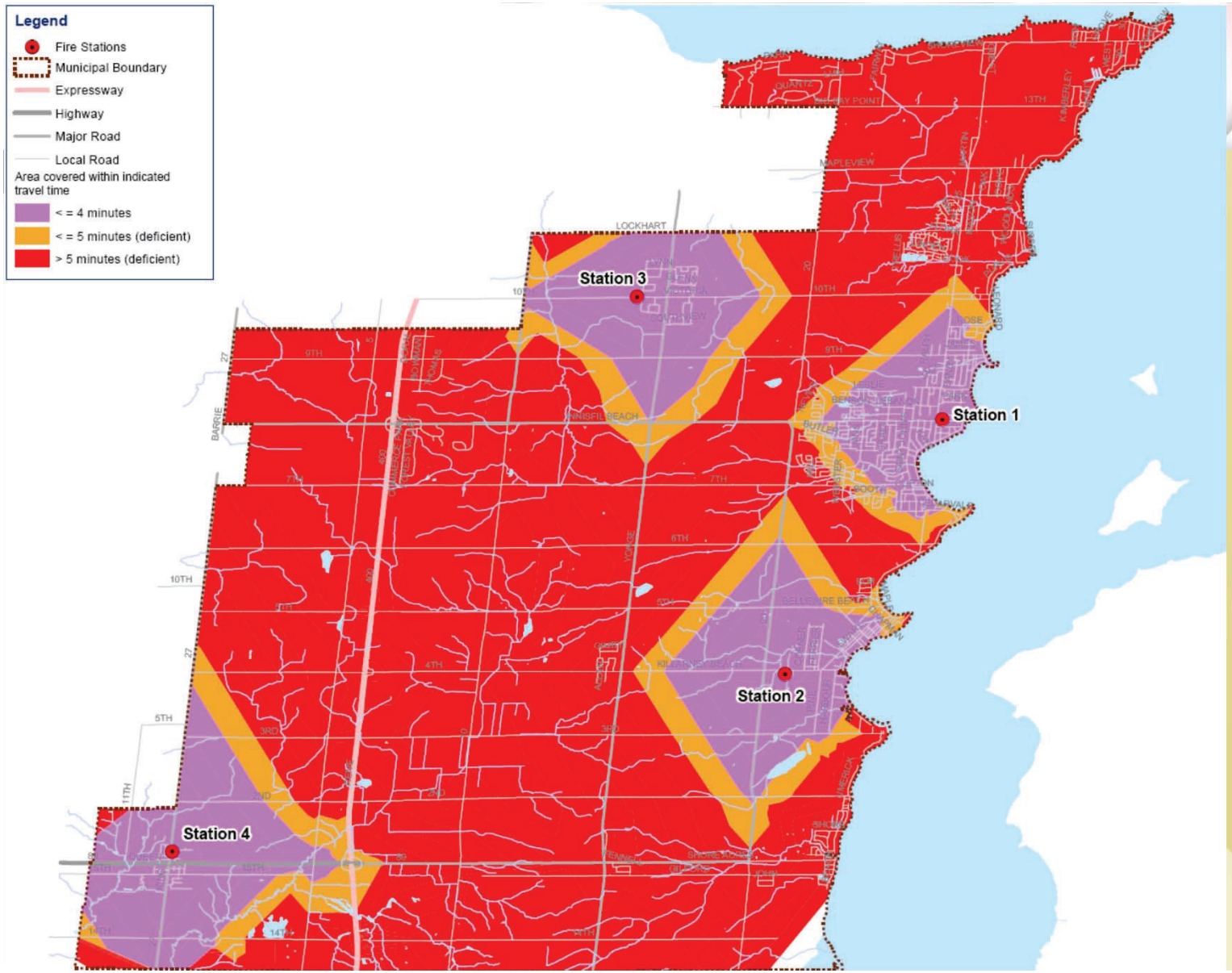
Options for Consideration

- ✓ Tiered response agreement
  - Revisions to current agreement
- ✓ Optimization of Fire Station Locations
  - Model based on best practices
  - Considering options for combining
  - Considering option for Big Bay Point
  - Consider partnership opportunities / shared facilities
- ✓ Utilization of automatic aid agreements
  - Barrie
  - Essa
  - New Tecumseth
- ✓ Develop community risk model

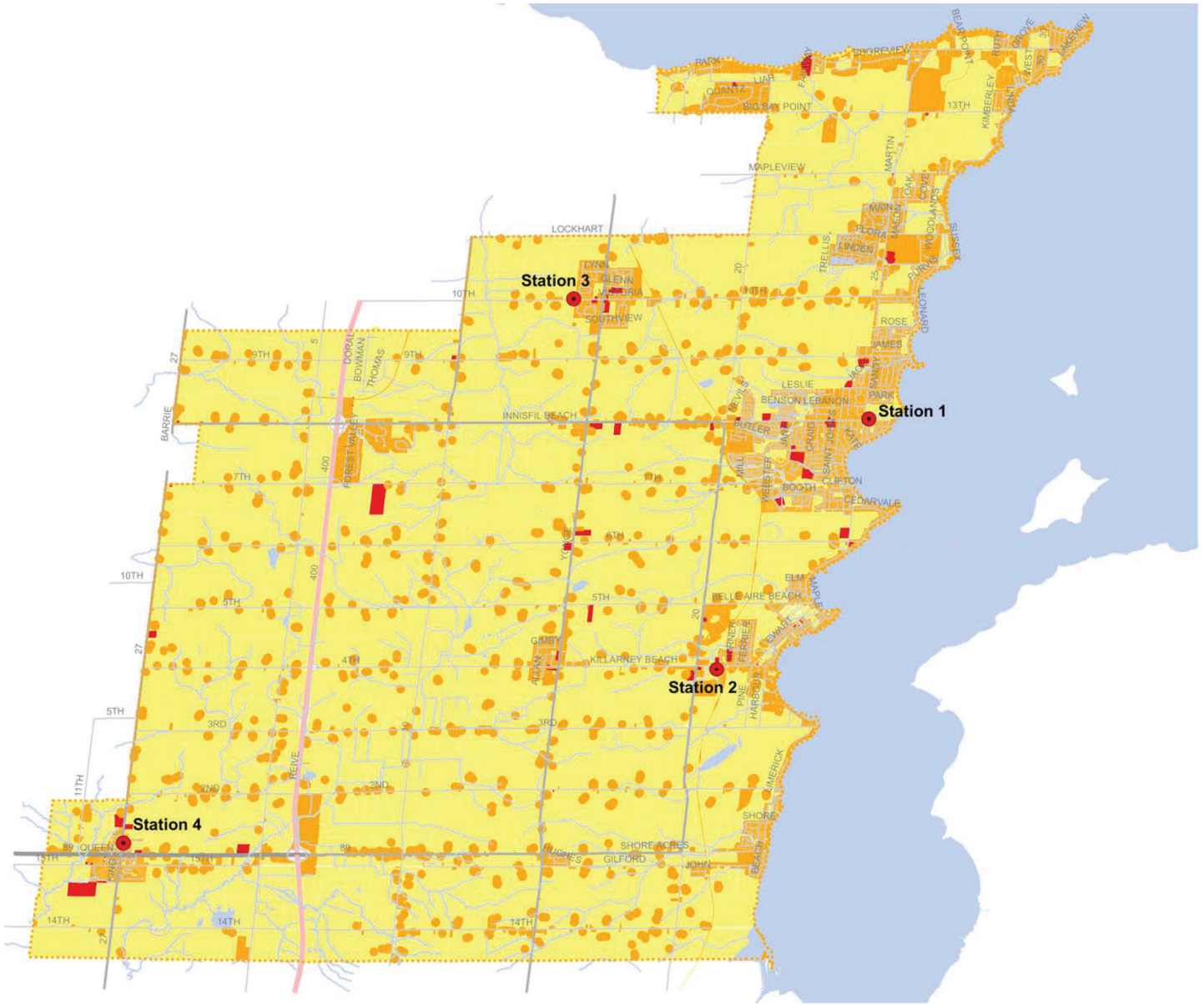


Key Challenges Summary

- ✓ New management team
- ✓ Training needs, standards & related time commitment
- ✓ Station facilities / locations
- ✓ Daytime response
- ✓ Turnout times / Response Times
- ✓ Firefighter deployment
  - First response best practices
  - Depth of response best practices
- ✓ Future development (Big Bay Point)
- ✓ Opportunities to enhance the three lines of defence



DILLON CONSULTING



TOWN OF Innisfil
Infinite Opportunities

TOWN OF INNISFIL
FIRE MASTER PLAN

DILLON CONSULTING

RISK AREAS

Legend

- Fire Stations
- Expressway
- Highway
- Major Road
- Local Road
- Municipal Boundary

Risk

- Low Risk
- Moderate Risk
- High Risk
- Extreme Risk

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF INNISFIL

MAP CREATED BY: SLS
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126085 20\Design_GIS\MXDs

DILLON CONSULTING

Consultation Summary

Consultation Activities to date:

- ✓ Steering Committee Meetings 1 & 2
- ✓ Interviews with staff / key stakeholders
- ✓ Council Workshop Session
- ✓ Community Information Open House

Consultation Activities to follow:

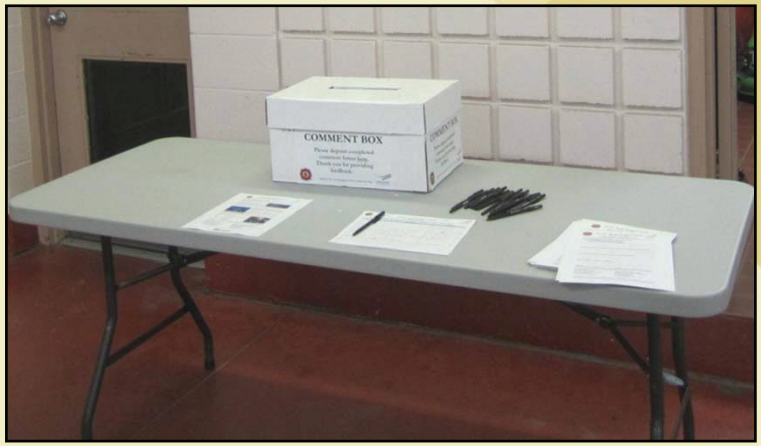
- ✓ Full-time and Volunteer Firefighter Sessions
- ✓ Interviews with Council members
- ✓ Steering Committee Meeting 3
- ✓ Final Presentation to Council

Public Input

- ✓ Are you satisfied with the level of service provided for the following?
  - residential and/or industrial areas (emergency response, etc.)
  - fire prevention initiatives (inspections, pre-planning, etc.)
  - public education events, programs and information
  - medical calls
- ✓ Do you have any specific concerns related to the Fire Department?
- ✓ Do you have any ideas how service delivery could be improved?

Public Input

Please provide feedback on the comment forms provided or by email at *scharbonneau@dillon.ca*.



Questions?