July 2021

# Strathroy-Caradoc Fire Department

# Fire Station Location Study

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## Acronyms

| | |
|---|---|
| CFAI | Commission on Fire Accreditation International |
| SCFD | Strathroy-Caradoc Fire Department |
| EM&T | Emergency Management & Training Inc. |
| FUS | Fire Underwriter's Survey |
| HVAC | Heating, ventilation, and air conditioning |
| MFP | Master Fire Plan |
| NFPA | National Fire Protection Association |
| NIOSH | National Institute for Occupational Safety and Health |
| NIST | National Institute of Standards and Technology |
| OFC | Ontario Fire College |
| OFMEM | Office of the Fire Marshal and Emergency Management |
| OHSA | Occupational Health and Safety Act |
| SCPS | Strathroy-Caradoc Police Service |
| SOG | Standard Operating Guidelines |

## Executive Summary

This Fire Station Location Study assesses the fire station locations and the options for the municipality of Strathroy-Caradoc. The plan assesses present and future population statistics and anticipated growth.

The overall goal of this document is to provide the fire service and the municipality with a comprehensive look at how the current stations are meeting the needs of the community and the options that are available. Once the plan is adopted, the next phase is implementation. Implementation will depend on the municipality's resources and ability to move forward with the associated recommendations contained within the document.

Ultimately, all decisions pertaining to the services provided, the staffing, and equipping of the fire service are those of Council. This document is to assist the Fire Chief and Council in continuing to provide a high-quality fire service in an efficient, economical, and effective way.

### Objectives

To ensure that they are meeting the needs of the community and their staff, the SCFD recognizes the importance of conducting this strategic review of the fire station locations as the community grows.

## Introduction

### Review Process and Scope

Emergency Management & Training Inc. (EM&T) has based its review process on the municipality's initial request to examine the current fire station locations and the optimum location for stations in the future. The review was completed by utilizing best practices, current industry standards, and applicable legislation as the foundation for all work undertaken. EM&T also used both quantitative and qualitative research methodologies to develop a strong understanding of current and future needs and circumstances of the community.

### Performance Measures and Standards

This study has been based upon (but not limited to) key performance indicators that have been identified in national standards and safety regulations such as:

- Office of the Fire Marshal and Emergency Management's (OFMEM) Public Fire Safety Guidelines.
- *The Fire Prevention and Protection Act* and its subordinate regulations, including the Ontario Fire Code O. Reg. 378/18 Community Risk Assessment.
- Office of the Fire Marshal and Emergency Management's (OFMEM) Integrated Risk Management program.
- The *Ontario Health and Safety Act*, with reference to the National Institute for Occupational Safety and Health (NIOSH).
- Ontario Fire Service – Section 21 Guidelines:
    - The Section 21 Committee is based on Section 21 of the *Ontario Occupational Health and Safety Act* (OHSA). This committee is charged with reviewing industry safety concerns and developing recommended guidelines to reduce injuries for the worker.
- The National Fire Protection Association (NFPA) standards:
    - NFPA 921 – Guide for Fire and Explosion Investigations
    - NFPA 1001 – Standard for Fire Fighter Professional Qualifications
    - NFPA 1002 – Standard for Fire Apparatus Driver/ Operator Professional Qualifications
    - NFPA 1021 – Standard for Fire Officer Professional Qualifications
    - NFPA 1031 – Standard for Professional Qualifications for Fire Inspector and Plan Examiner

- NFPA 1033 – Standard for Professional Qualifications for Fire Investigator
- NFPA 1035 – Standard on Fire and Life Safety Educator, Public Information Officer, Youth Fire Setter Intervention Specialist and Youth Fire Setter Program Manager Professional Qualifications
- NFPA 1041 – Standard for Fire Service Instructor Professional Qualifications
- NFPA 1061 – Professional Qualifications for Public Safety Telecommunications Personnel
- NFPA 1072 – Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications
- NFPA 1201 – Standard for Providing Fire and Emergency Services to the Public
- NFPA 1221 – Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems
- NFPA 1500 – Standard on Fire Department Occupational Safety, Health, and Wellness Program
- NFPA 1521 – Standard for Fire Department Safety Officer Professional Qualifications
- NFPA 1582 – Standard on Comprehensive Occupational Medical Program for Fire Departments
- NFPA 1583 – Standard on Health-Related Fitness Programs for Fire Department Members
- 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
- NFPA 1730 – Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations
- NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
- NFPA 1901 – Standard for Automotive Fire Apparatus
- NFPA 1911 – Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles

- The Commission on Fire Accreditation International (CFAI), which is a program that promotes fire service excellence by evaluating a fire department based on related National Fire Protection Association standards, local legislation and industry best practices (the parent organization for Commission on Fire Accreditation International is the Centre for Public Safety Excellence).
    - This program has been adopted by many fire departments in Canada as a measure of best practices. Within Ontario, Guelph, Kitchener, Toronto, and Ottawa are just a few fire departments that have obtained accreditation from the Commission on Fire Accreditation International.
- Fire Underwriters Survey (FUS) technical documents

**Project Consultants**

Although several staff at EM&T were involved in the collaboration and completion of this Plan, the core review was conducted by:

- Darryl Culley, President, Emergency Management & Training Inc.
- Rick Monkman, Fire Service Consultant

Together, the team has amassed a considerable amount of experience in all areas of fire and emergency services program development, review, and training. The EM&T team has worked on projects that range from fire service reviews, creation of strategic and master plans, and development of emergency response programs for clients.

# SECTION 1: COMMUNITY AND FIRE DEPARTMENT OVERVIEW

## Section 1: Community and Fire Department Overview

This Station Location Study for the Strathroy-Caradoc Fire Department (SCFD) analyzes and identifies current and probable community fire risks and needs over the next 10 years and beyond. This will greatly assist SCFD with future planning relating to staffing and response, fire and life safety programming, and asset management.

### 1.1 Community Overview

The Municipality of Strathroy-Caradoc is one of eight lower tier municipalities of Middlesex County. The municipality is bordered by Middlesex Centre on the east, Adelaide Metcalfe on the north, Southwest Middlesex on the west, and three First Nations to the south; Chippewas of the Thames First Nation, Muncey Delaware First Nation, and Onyota'Aka First Nation.

The municipality is also served by important thoroughfares in Highway 402 and County Road 81. Three rail lines transverse the municipality. While most of Strathroy-Caradoc is agricultural, the transportation links create opportunities for industrial development.

With its history dating back to 1832, the Town of Strathroy and Township of Caradoc were amalgamated as the Municipality of Strathroy-Caradoc in 2001. Strathroy is the largest community in the Municipality with a population of approximately 15,000[1] and serves and the administrative and business centre. Other settlements in the Municipality include Mount Brydges, Melbourne, Campbellvale, and Delaware West, all considerably smaller than Strathroy. These settlements are primarily bedroom communities, with Mount Brydges being the largest of these with approximately 2,200 residents. In addition to the settlement area, it includes limited commercial and industrial space. Just east of Mount Brydges, there are three rural residential neighbourhoods. Melbourne has a population of approximately 300, of which roughly half live within the Strathroy-Caradoc boundary.

The Municipality has a large focus on agriculture including cash crops, tobacco, and livestock. Agriculture will continue to be a significant component of the Municipality's economic base and the predominant use of land in the rural area.

[1] Municipality of Strathroy-Caradoc Official Plan Consolidated Version, April 3, 2018

**Figure 1a: Middlesex/ Strathroy-Caradoc Map**

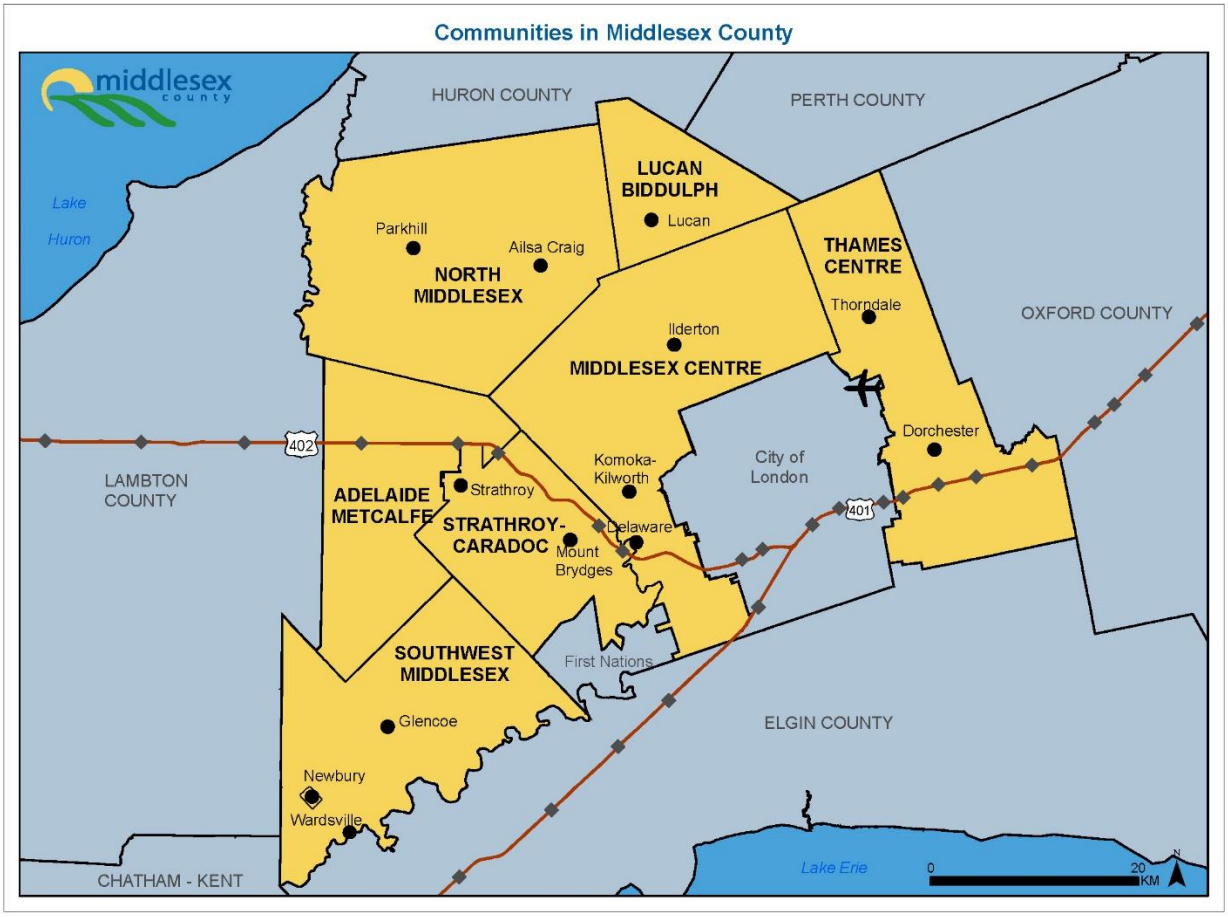
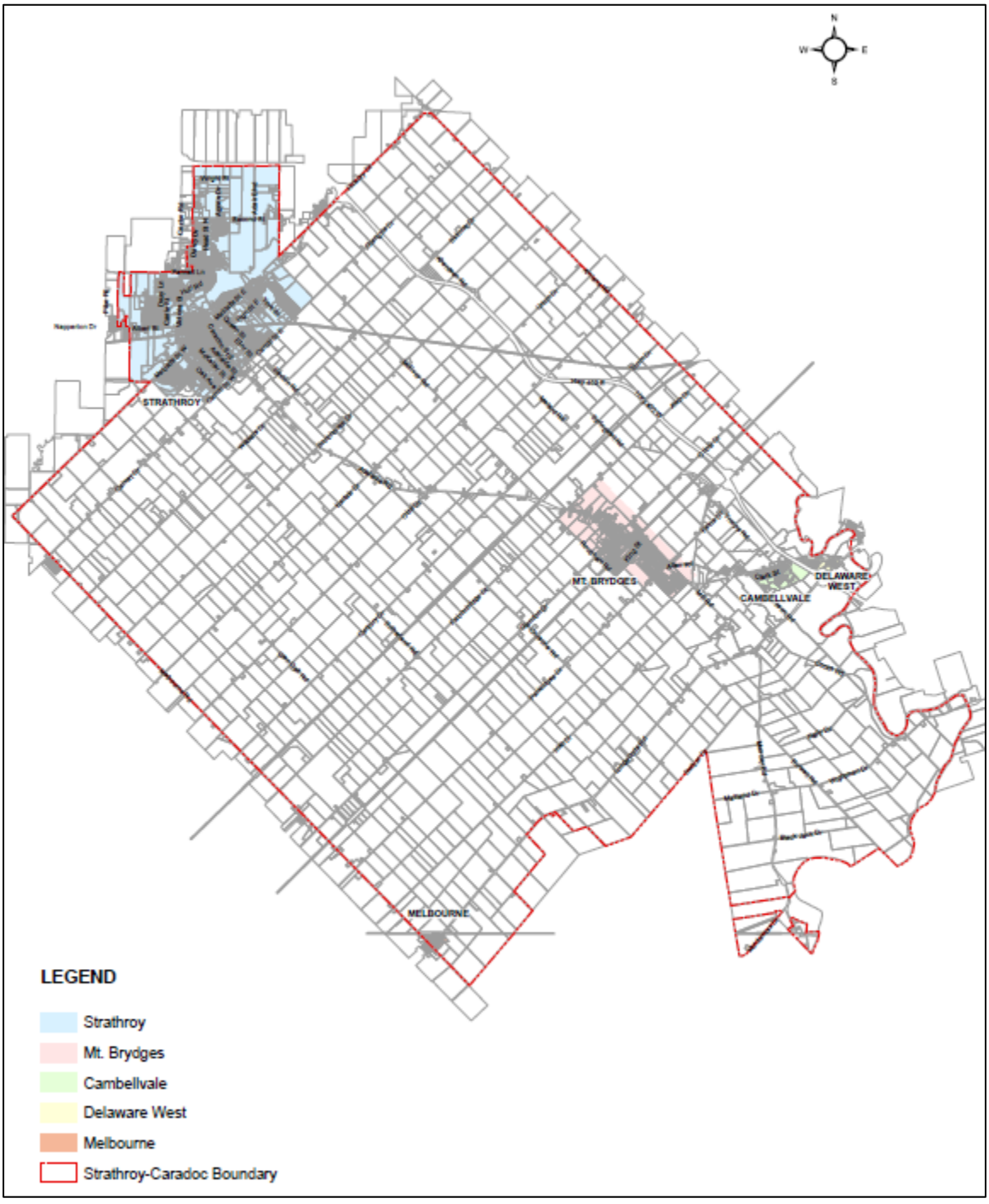


**Figure 1b: Strathroy-Caradoc Overview Map**




With a population of 20,867 that has remained relatively steady over the years, Strathroy-Caradoc has shown limited growth in the census years of 2001 to 2016. Since 2001, the population has grown 9.1%, albeit with some rise and fall (see Table 1a). The 2016 Census data also shows that the median age is 43.7 years, with the provincial median age being 41.3 years.

Strathroy-Caradoc has 270.8 $km^2$ with a population density of 77.1 persons/ $km^2$.

**Table 1a: Strathroy-Caradoc Population 2001-2016**

| 2001 | 2006 | 2011 | 2016 |
|---|---|---|---|
| 19,114 | 19,977 | 20,978 | 20,867 |
| - | +4.5% | +5.0% | -0.6% |

## 1.2 Fire Department Composition

SCFD is comprised of 1 full-time Fire Chief, 1 full-time Administrative Assistant, 1 volunteer Deputy Chief, 2 volunteer District Chiefs, 9 volunteer Captains, and 60 volunteer firefighters.

The Fire Department's operations are divided into four sections: Prevention and Public Education, Operations and Suppression, Training, and Administration.

Between 2018 and 2020, SCFD responded to an average of 314 incidents per year.

## 1.3 Fire Station Locations

Figure 1c identifies the locations of the three fire stations within the marked municipal borders. Station #1 is located at 23 Zimmerman Street North, in the Town of Strathroy. Station #2 is located at 688 Bowen Street in the Village of Mount Brydges. Station #3 is located at 21912 Melbourne Road in the Village of Melbourne.

**Figure 1c: SCFD Station Locations with 8-minute Travel Times**

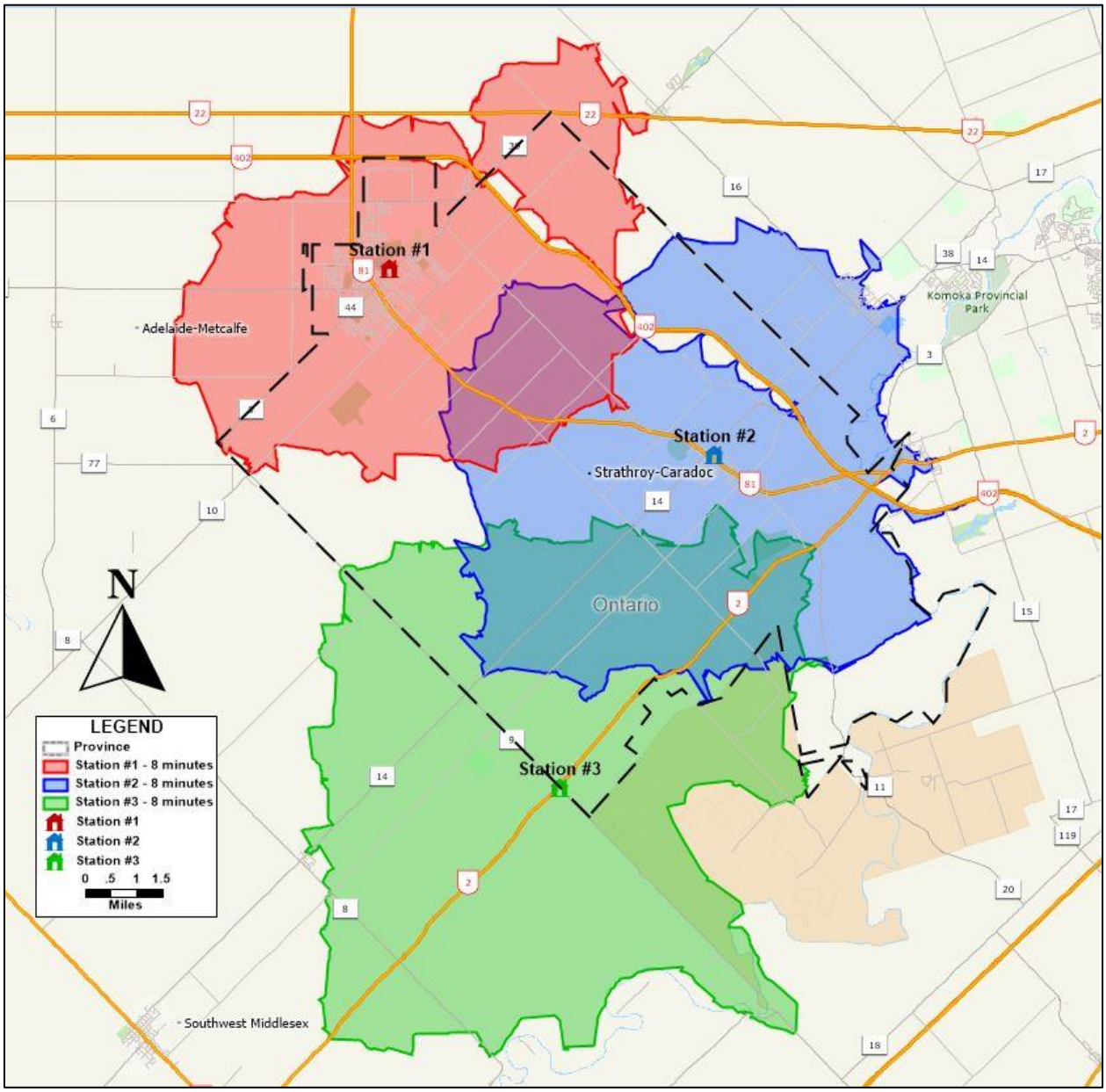


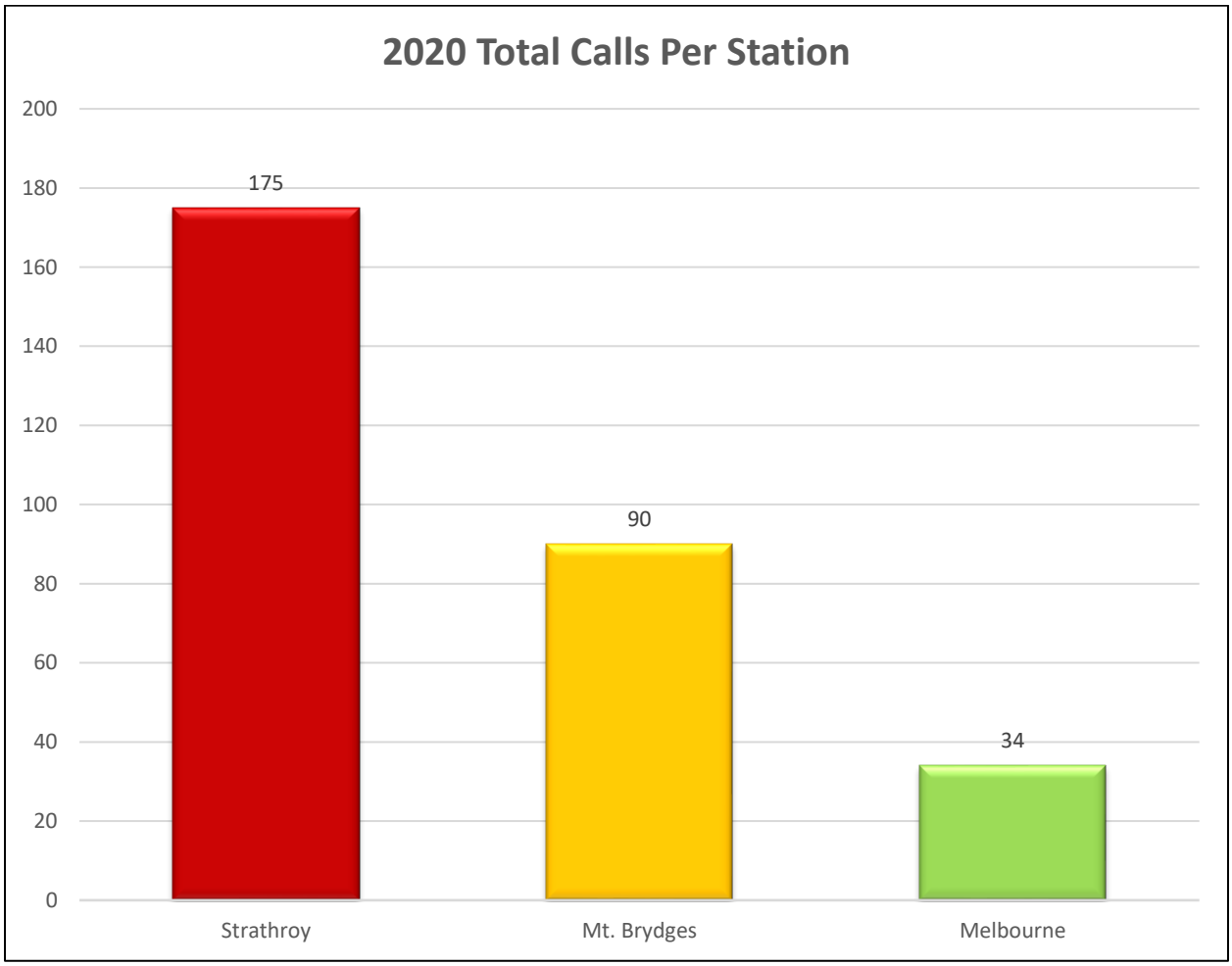

Figure 1c depicts the response coverage offered by the three fire stations in relation the National Fire Protection Association (NFPA) response recommendations of 14 minutes. The map's legend notes an 8-minute travel time. This is the drive time coverage by each station, considering that it takes approximately 6 minutes for the volunteer firefighters to respond to the fire station, get geared up, and depart from the station.

The recommended response time standard for suburban areas (Strathroy) under NFPA 1720 is 10 minutes while the recommended standard for rural areas is 14 minutes.

As illustrated above, the three fire stations offer a sufficient level of coverage for the community.

The following chart identifies the number of calls per station. The number of calls per station is correlated with the population density, commercial/ industrial properties, and highway traffic (e.g., Mount Brydges covers a large portion of Hwy 402), in each station area.

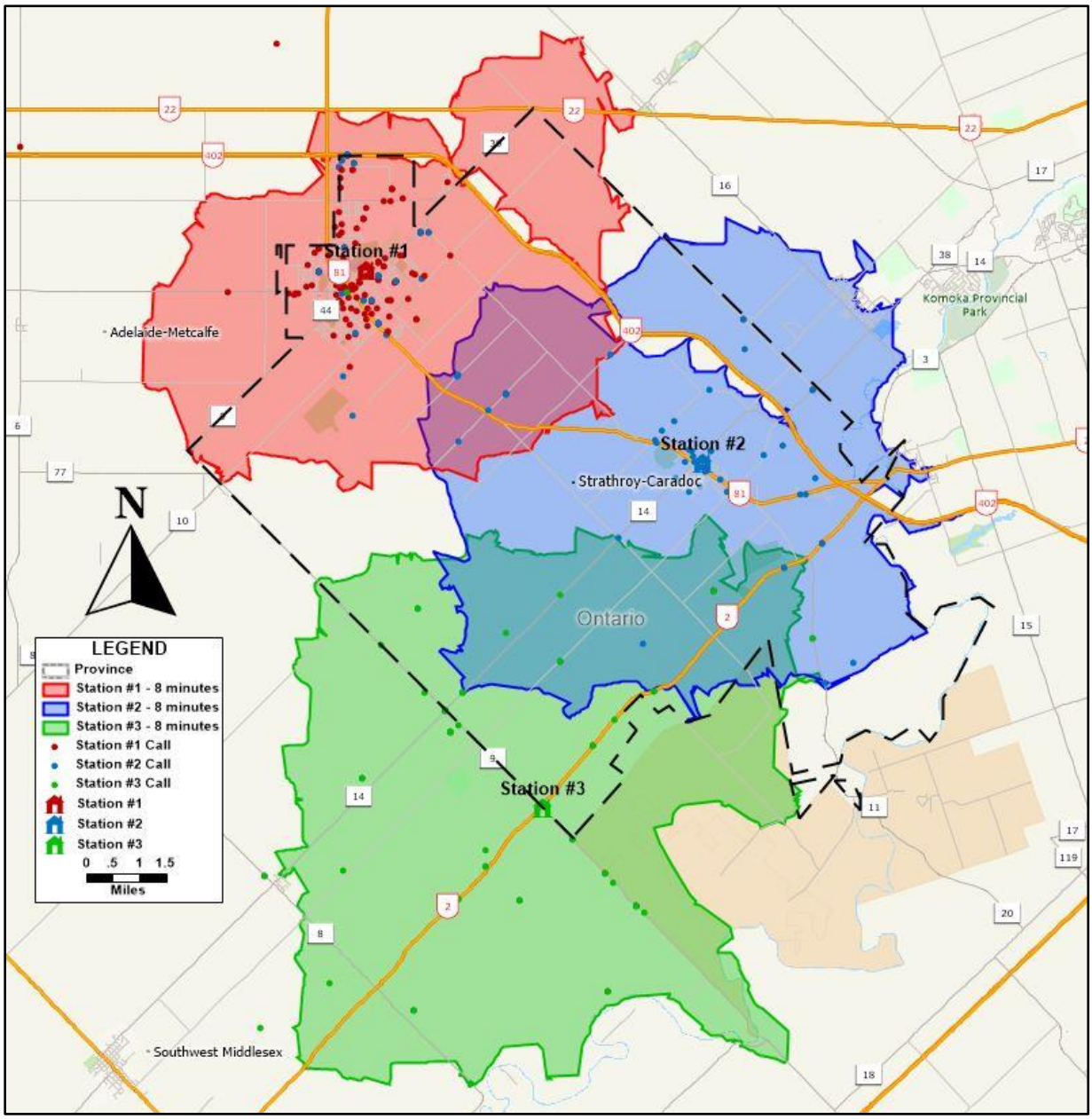
**Figure 1d: 2020 Total Calls Per Station**




Another important consideration in reviewing call data is location. The distribution of calls is essential for SCFD to fully understand the scope of their response expectations. Identifying call clusters, whether by location or type, is a useful tool. Implementing the first two lines of defence (public education and code enforcement) can aid in reducing the amount and frequency of calls that occur in clusters. Call location is also useful in ensuring that station location is meeting the needs of Strathroy-Caradoc. If calls are consistently occurring beyond the range of efficient and reliable response times as identified in NFPA 1720, corrections and improvements must be addressed. Figure 1e

highlights the calls for service for SCFD in 2019. It also has colour shading to display the 8-minute travel time areas for each station.

**Figure 1e: SCFD Calls by Location**




As can be seen in the above map, the largest density of calls is within the Strathroy developed area (Station #1), with a small cluster in the Mount Brydges area (Station #2). Outside of those areas, the calls are relatively scattered throughout.

The vast majority of calls within the municipality are within the 8-minute travel time grid from Station #1 and Station #2.

## 1.4 Future Call Volume Expectations

There are factors that can impact the call volume from year to year such as weather patterns, including severe storms, or major road construction projects that detour traffic. Longer-lasting changes, however, are directly related to these factors:

- Operating procedures
- Changes in technology
- Public education
- Community growth

Modifications to operating procedures can change call volume dramatically. For example, in those communities that participate in tiered medical response, calls will often increase the overall call volume of the department by 80-100% resulting in as many as half the fire department calls being medical related.

Changes in technology can add or reduce the number of calls that the fire department responds to. For example, the addition of CO alarms, while having the potential to save lives, adds to the number of fire department responses. In 2018, CO calls made up 20% of the department responses. As more homes tie their smoke detectors and fire alarms into monitoring stations, it is anticipated that the number of alarm calls will increase. Police services have seen a significant growth in alarm calls, with some communities getting so many that they no longer respond to alarm calls unless they have been confirmed by a secondary system or person on scene.

Public education can influence call volumes. For example, education programs, including the enforcement of penalties for multiple alarms, can reduce the number of false alarms the fire department responds to. Education and enforcement on public burning can reduce the number of grass fires and nuisance smoke complaints.

Community growth will also have an impact on calls; greater populations along with increases in commercial/ industrial properties and traffic will impact call volume growth.

On January 19, 2021, the Director of Planning for Middlesex County provided a report to the County Committee of the Whole forecasting the growth of housing and populations for the county and each municipality in the county.

In the report, a low growth scenario, reference scenario, and high growth scenario were provided for each municipality. The report predicts that the annual growth rate of Strathroy-Caradoc will range from 1.4% (low scenario) to 2.1% (high scenario). The reference scenario is 1.8%. Strathroy-Caradoc has adopted the 2.1% annual growth as their forecasted growth rate. This planned growth is limited to the suburban areas of Strathroy and Mount Brydges.

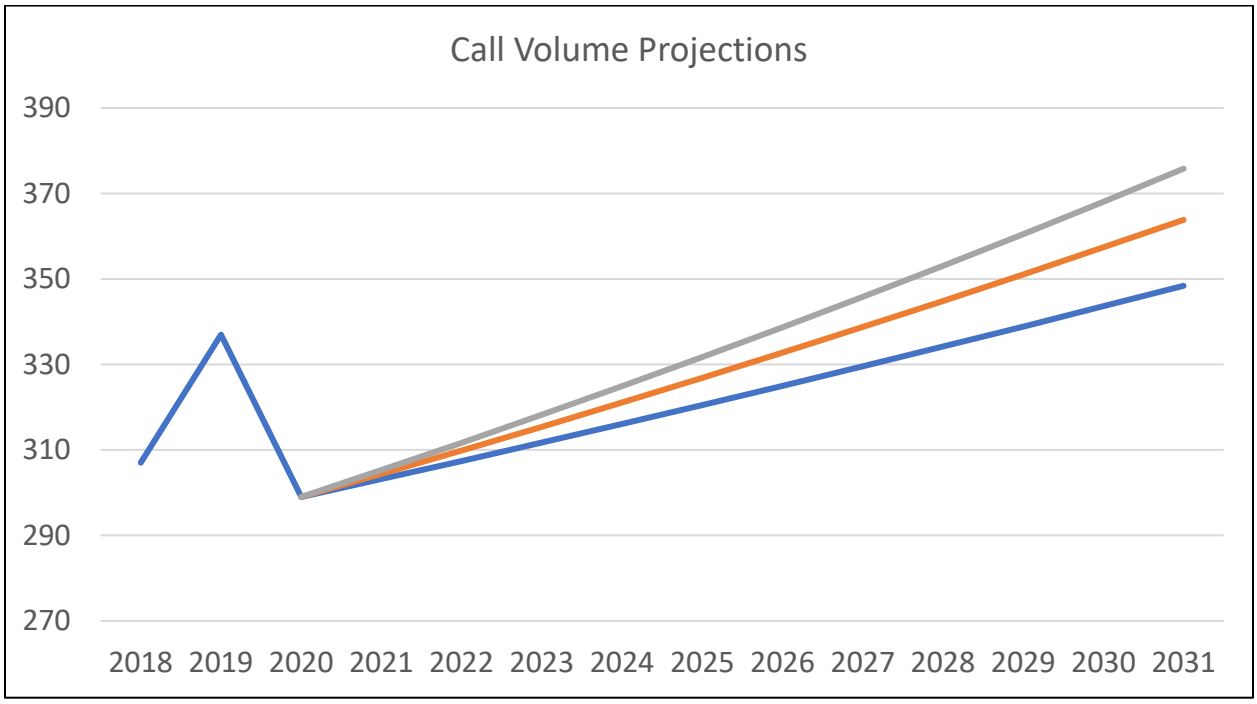
**Figure 1f: Housing Forecast by Local Municipality**

Middlesex County
Housing Forecast by Local Municipality – Low Scenario, 2016 to 2046

| Year | Village of Newbury | Municipality of Southwest Middlesex | Municipality of Strathroy-Caradoc | Municipality of Thames Centre | Municipality of Middlesex Centre | Municipality of North Middlesex | Township of Adelaide-Metcalfe | Township of Lucan Biddulph | Middlesex County |
|---|---|---|---|---|---|---|---|---|---|
| 2016 | 180 | 2,350 | 8,300 | 4,920 | 5,990 | 2,330 | 990 | 1,790 | 26,820 |
| 2021 | 180 | 2,390 | 9,050 | 5,240 | 6,550 | 2,370 | 1,020 | 1,970 | 28,770 |
| 2026 | 200 | 2,550 | 9,800 | 5,620 | 7,110 | 2,560 | 1,110 | 2,080 | 31,030 |
| 2031 | 210 | 2,620 | 10,530 | 5,910 | 7,690 | 2,630 | 1,150 | 2,210 | 32,950 |
| 2036 | 220 | 2,680 | 11,230 | 6,220 | 8,430 | 2,700 | 1,190 | 2,380 | 35,060 |
| 2041 | 240 | 2,740 | 11,980 | 6,550 | 9,310 | 2,770 | 1,230 | 2,560 | 37,380 |
| 2046 | 250 | 2,790 | 12,660 | 6,840 | 10,180 | 2,810 | 1,260 | 2,780 | 39,560 |
| Share of 2016 County Housing | 1% | 9% | 31% | 18% | 22% | 9% | 4% | 7% | 100% |
| Share of 2046 County Housing | 1% | 7% | 32% | 17% | 26% | 7% | 3% | 7% | 100% |
| **Housing Growth** | | | | | | | | | |
| 2016-2046 | 70 | 440 | 4,360 | 1,920 | 4,190 | 480 | 270 | 990 | 12,740 |
| Annual Growth Rate, 2016-2046 | 1.1% | 0.6% | 1.4% | 1.1% | 1.8% | 0.6% | 0.8% | 1.5% | 1.3% |
| Share of County Housing Growth, 2016-2046 | 1% | 3% | 34% | 15% | 33% | 4% | 2% | 8% | 100% |

This forecasted growth in households appears, over the long-term, to be steady, but not overwhelming. Using the report figures to project the call volume, we can project that the call volumes of the fire department will range from 350 (low scenario) to 375 calls (high scenario) per year.

**Figure 1g: Yearly Call Volume Projections**




While call volume will increase with the population growth, it will be primarily in the two developed communities of Strathroy and Mount Brydges.

# SECTION 2: FIRE STATION REVIEW

## 2.1 STATION #1 - OVERVIEW
## 2.2 STATION #2 - OVERVIEW
## 2.3 STATION #3 - OVERVIEW

## 2.0 Fire Station Review

The SCFD operates from 3 stations – Station #1 is located at 23 Zimmerman Street North, in the Town of Strathroy; Station #2 is located at 688 Bowen Street, in the Village of Mount Brydges; Station #3 is located at 21912 Melbourne Road in the Village of Melbourne.

### 2.1 Station #1 - Overview

Station #1 is a 6-bay station with offices located on the first floor and an Association Room and storage on the second floor. The original date of construction is unknown, however, when the fire department moved in on November 27, 1975, it had been used as a manufacturing plant for truck bodies.

The station has undergone three expansions and renovations since that time. The station has served the community well but has many limitations for its ability to serve as a fire station in the future. A review by the Office of the Fire Marshal of the Fire Department in 1990 recommended that a new fire station replace the current building.

The station has three bay doors at the front, two of which are drive-through. There is an additional short bay on the side of the station.

This station houses an Engine, Tanker, Aerial Truck, Rescue Truck, and Rehab Trailer, as well as a Service Truck (used to transport equipment as well as for Fire Prevention).

The station serves as the headquarters with a reception area and offices for the Fire Chief, Deputy Chief/ District Chief (shared) and Fire Prevention. A training room was added to the back of the station on the main floor.

The station is served by an emergency generator, but it only provides power for a portion of the building; there are three separate electrical panels due to the renovations that occurred at different times.

The building lacks a proper heating, ventilation, and air conditioning (HVAC) system which becomes challenging in the offices in the winter and summer seasons.

Much of the station has cladding over frame which has the potential to conceal any structural issues.

The garage doors at the station lack safety devices to prevent them from closing on a person or vehicle.

The station had an oil separator built into the floor drains but there have been concerns that it may not be working properly.

Photo below: The fire department moved to this location as a temporary measure in 1975 as the town hall required the space that was previously allocated to the fire station.


The firefighters' bunker gear is stored on the apparatus floor, which exposes the gear to diesel exhaust and other contaminates, eventually degrading the efficiency of the equipment and reducing life span. The storage of the bunker gear in this manner also exposes the general area to contaminants obtained from fire responses and other types of calls. Even the bunker gear driers are located on the apparatus floor.

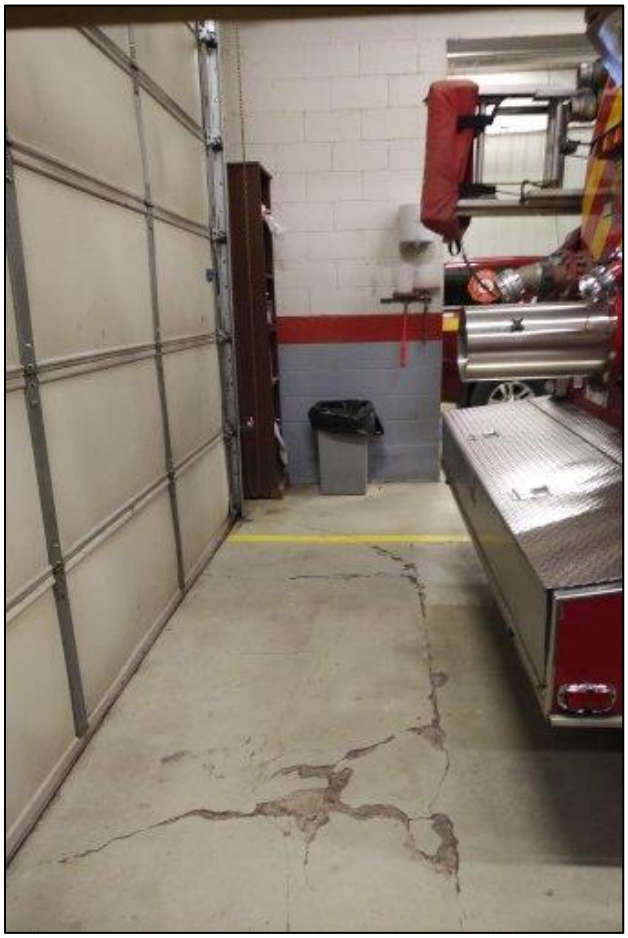
New station design incorporates a room that is properly ventilated whereby bunker gear can be laundered, dried, and returned to service, as well as a separate room for the bunker gear racks, hanging of the gear for the firefighters' easy access for calls, and limiting the exposure of toxic fumes to the other areas of the fire station.

Further, the doors into the office area from the apparatus floor are not airtight, allowing for the potential of toxic fumes from the bunker gear, apparatus, and equipment to seep into the office area.

The administration area has one unisex washroom, that does not appear to meet the requirements for disability access. The apparatus floor has both a male and female washroom and a unisex shower but lacks locker/ change rooms, which are important so that firefighters do not wear contaminated clothing home.

The flooring in the radio room and washrooms need structural review as they are not solid and move when walked on.

The garage doors do not fit tightly to the wall and are not insulated. This results in cold air and snow blowing in through the gaps.



While there is a small maintenance room with tools to repair equipment, the station lacks a proper area to clean and disinfect SCBA face masks, SCBAs, medical equipment, etc. This should be a sealed room from the apparatus floor with proper sinks to clean the equipment and area to air dry. Further, it is far too small for current needs.

There appears to be cracks in the block walls and the apparatus floor. It is therefore recommended that a structural engineering assessment of the building take place if the building is to be retained by the Municipality.

There is significant cracking and breaking up of the poured concrete floor in the apparatus bays that required professional examination and repairs. It was reported that this floor has been repaired at least three times previously.

Overall, the building is reaching an age where replacement should be considered.

It is recommended that the Municipality invest in a new fire station that is designed to meet the growing needs of the fire service for the next 50-70 years.

Considerations for a new station, which are not part of the current station, should include:

- Adequate space in the garage bays with drive-through access.

- Appropriately sized garage doors for larger vehicles.
- Electrical system designed to eliminate the use of extension cords for long-term use.
- Office space for the Fire Chief, Deputy Chief, District Chief, Fire Prevention, and Training Officer, and room for expansion.
- Training room that can accommodate all the firefighters in the station.
- Fitness room.
- Bunker gear stored in a self-contained room with appropriate ventilation.
- Proper unisex washrooms and locker rooms.
- Adequate number of unisex showers that allow multiple firefighters to decontaminate before going home.
- Storage rooms.
- Kitchen/ lunchroom.
- Emergency generator that can run all electrical needs within the station.

Further, any new station should be built to accommodate the potential of full-time firefighters at the station.

In constructing a new fire station, there are other opportunities to incorporate needed city facilities including a properly designed Emergency Operations Centre, a purpose designed larger dispatch centre for the Strathroy-Caradoc Police Service (SCPS) (which also dispatches all the fire departments in the county), training and fitness facilities that could be shared with the police, and even secure a parking facility shared with the police.

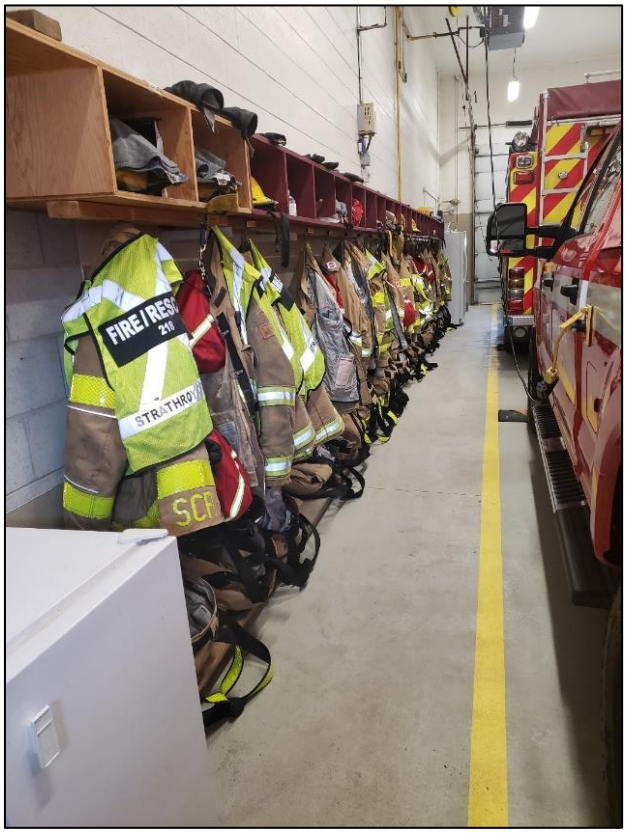
If the decision is made not to replace the station, it is critical to conduct an engineering review of the buildng including an in-depth structural assessment, electrical assessment, asbestos/ hazardous materials assessment, environmental assessment (floor drains), HVAC assessment, fire code assessment, roofing assessment, and plumbing assessment. EM&T's analysis was derived from a visual perspective only; no engineering review was performed on the buildings.

EM&T estimates the costs for the assessments to be up to $75,000. The value of the work required would be determined by the assessment.

## 2.2 Station #2 - Overview

Station #2 is a two-bay, single length garage structure located in Mount Brydges, built in approximately 1994.

This station is home to an Engine, Tanker, and Service pick-up truck which is designed to carry crew and equipment. Although the length of the bays comfortably hold an apparatus and a pick-up truck, they would not be adequate to hold a third larger apparatus.



The station does not have shower facilities for the firefighters. Reducing the risk to firefighters and their families, proper showers are recommended for use following calls to decontaminate from pollutants such as blood, smoke, and chemicals.

The station has a training room but lacks a fitness room.

Firefighter bunker gear is stored on the apparatus floor exposing it to diesel fume contamination. It is recommended that bunker gear be stored in a separate ventilated room.

For the apparatus to enter the drive-through bays from the rear, they must travel over private property owned by the Royal Canadian Legion. The

Municipality should confirm a right of way is in place to guarantee fire department access.

It is recommended that an addition be added to the station to include a proper office, training room, and bunker gear storage.

## 2.3 Station #3 - Overview

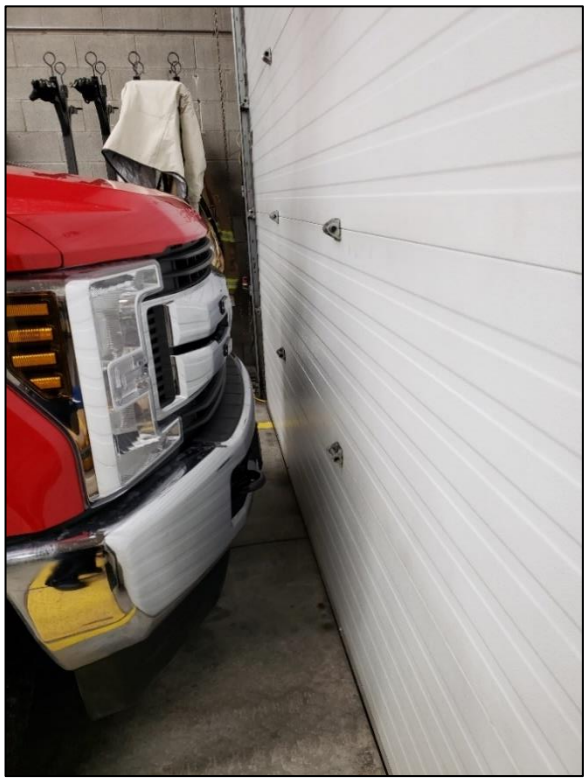
Station #3 is a block, non-combustible, steel clad, two-bay (1½ length) building constructed in 1997. One bay is a drive-through.

The station has a pumper, small tanker, and a service truck (pick-up) for transporting firefighters and equipment.

The building is on a very small lot close to the roadway with no parking for the firefighters responding to the station.

Due to the proximity to the road, the apparatus cannot sit on the apron for vehicle checks, washing, loading hose, etc. without blocking the sidewalk and encroaching on the roadway. Apparatus washing is done with the truck half in the station and half out.


The station has a training room and an office. There are male and female washrooms, both equipped with showers.



Although the station has municipal water, there is no municipal sewer. A holding tank holds wastewater and must be pumped out monthly.

The lot is so small that a fuel tank for the station is located partially on the neighbouring lot.

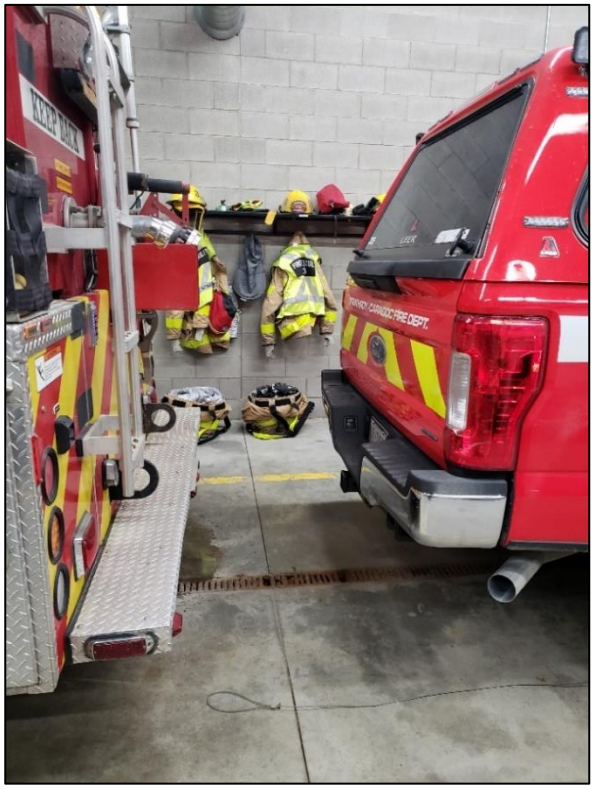
Having 1½ length bays creates very tight accommodations in the bay where the pickup truck is kept, creating a potential crush point. Further, there is no room to do vehicle checks around the apparatus and the service truck unless the garage doors are open.

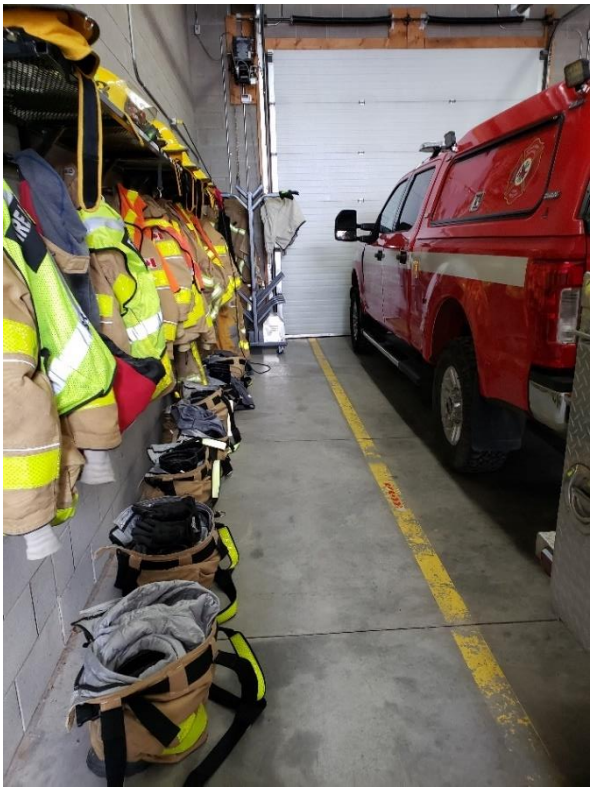
Should the department wish to move to a larger pumper/tanker as is commonly occurring to provide additional water and pumping capabilities at rural fires, there is not adequate space.

With limited space between the garage doors and the front of each vehicle, there is no opportunity for error and proper backup protocol with a guide is mandatory.

Further, the bunker gear is stored on the apparatus floor.

This station does not have an emergency generator. In the event of a power failure lasting more than a couple hours, many in the community may need to find a location of refuge and often first turn to the fire station. This includes people who have illnesses that may require electrical equipment such as IV pumps, oxygen concentrators, electric wheelchairs, and other medical equipment, as well as heat in the winter and air conditioning in the summer.





The floor grates are in poor condition and should be replaced.

While this station needs a renovation to provide added space, the lot is too small to do so.

The challenges noted with all three of the stations will require the municipality to make an investment in the stations to meet the growing requirements of the fire service. This is particularly important as the fire department prepares to move to a composite service, mixing career (full-time) firefighters with volunteer (on-call) firefighters. This change will require fire stations to be equipped to accommodate firefighters at the stations 24/7, including proper training areas, night accommodations, kitchen and day room facilities, locker rooms, showers, etc. These changes require additional space that is currently not available at stations 2 or 3.

The move to adding career firefighters will be phased in based on several factors including call volume growth, reliability, and responsiveness of volunteers, changing risk factors such as industrial growth and increase transportation risks on the highway and railway lines, and increased specialty training expectations in the future (e.g., confined space).

The addition of career firefighters would be focused in the high call demand area of Strathroy, followed, as community growth continues in the Mount Brydges area.

Career firefighters provide additional flexibility in determining the best areas for a fire station. As they are at the station and turnout time is 1 to 2 minutes, vs the 6-10 minutes with volunteers, they can cover a much larger area within the same response time of the volunteer model.

Volunteers must travel to the station prior to responding which necessitates that the station be in proximity to where the volunteers live. As career firefighters are based at the station, the station can be more flexible in its placement.

**Station #1 - Solutions**

Fire Station #1 is in need of replacement. As for the location, there are a couple of options. Due to the space requirements of a new station, there are only two locations with adequate space that the municipality already owns.

An option is to rebuild at the current location. The station could be constructed in the vacant parking lot area on the corner of Zimmerman Street North with direct access to Metcalfe Street East. Once the station is completed, the old station could be removed to accommodate the parking and access needs.

This location has provided an acceptable response level to the community for many decades. As the department moves to career firefighters, the turnout time will be reduced, improving the response capabilities.

A second option is the property on Francis Street to the north of SCPS. Response modeling shows that this location provides a similar level of response coverage, enhanced to the southern part of the community.

Advantages to this location include being in proximity to the police service where facilities built into the new fire station could be shared. These include a purpose-designed dispatch facility, training rooms, Emergency Operations Centre, secured parking, etc. These benefits enhance the emergency services through an economical and efficient collaboration of resources.

When the community risk is assessed regarding the stations, the proximity to vulnerable occupancies and locations with higher risk is considered. The following chart identifies that there is no significant difference in distances between either station option.

| | **Zimmerman St N Stn** | **Francis St Stn** |
|---|---|---|
| Strathroy Middlesex General Hospital | 2.2 km | 2.6 km |
| Strathroy District Collegiate | 4.4 km | 5.1 km |
| Sprucedale Care Centre (LTC) | 1.1 km | 2.1 km |
| Strathmere Lodge (LTC) | 2.8 km | 2.9 km |
| West Middlesex Memorial Centre | 1.9 km | 1.9 km |

Using the hospital as a key risk location, the travel distance from the current fire station to the hospital is 2.2 km. From the Francis Street location, it is 2.6 km.

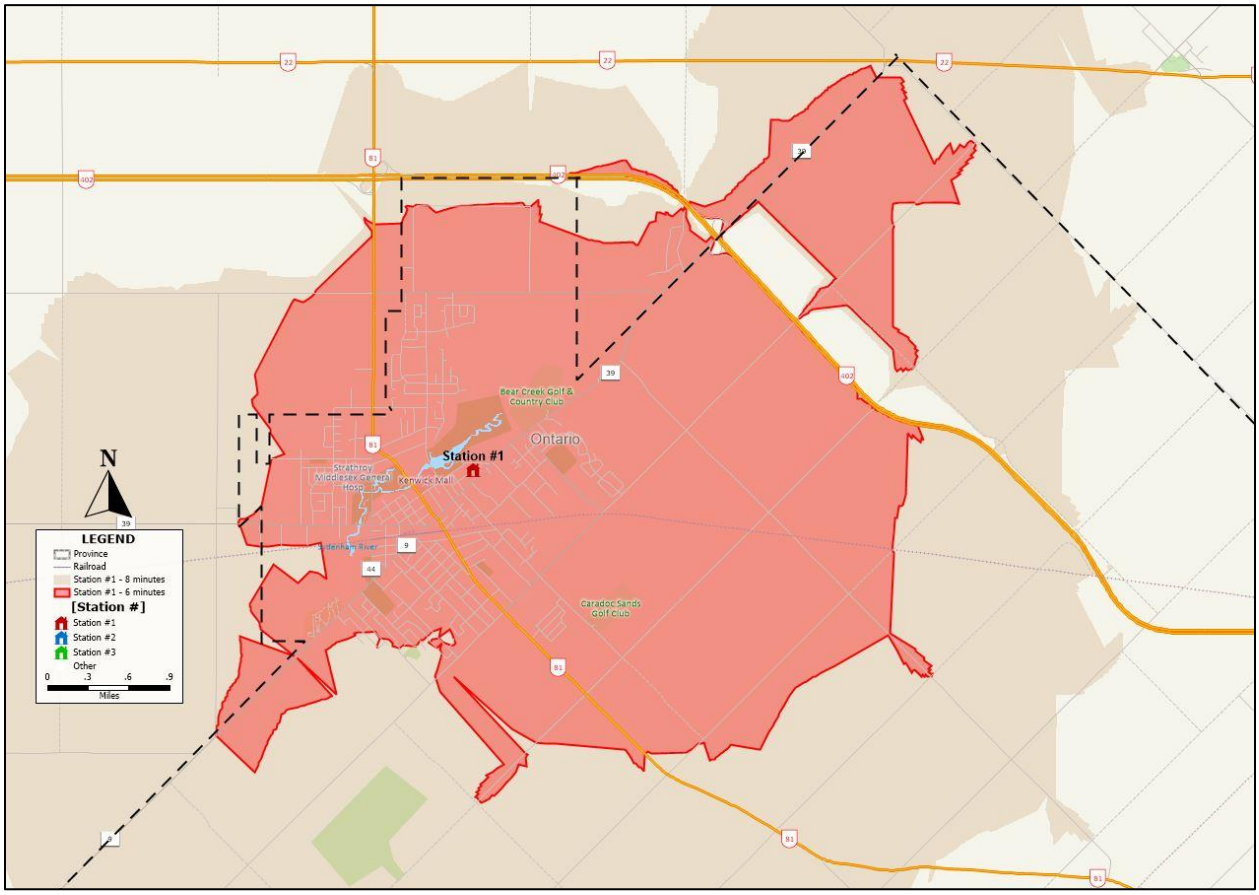
While there are small distance changes to some of the community infrastructure for a new station on Francis Street, the new location would be much closer to any of the popular community amenities including Walmart Super Centre, Canadian Tire, and other consumer-based stores and restaurants.

Using the NFPA Standard 1720 10-minute response time for a suburban response using volunteers within the core of the Strathroy boundaries, the following charts show the travel capabilities using a 6-minute travel time (based on a 4-minute turn out time) for the two station options. The beige area demonstrates the area that can be covered within 8 minutes travel.

Note: travel time is based on the speed limits within the community, stop signs, traffic lights, one-way streets, etc. We acknowledge that fire apparatuses are legally allowed to exceed the speed limit while using lights and sirens when safe to do so, therefore

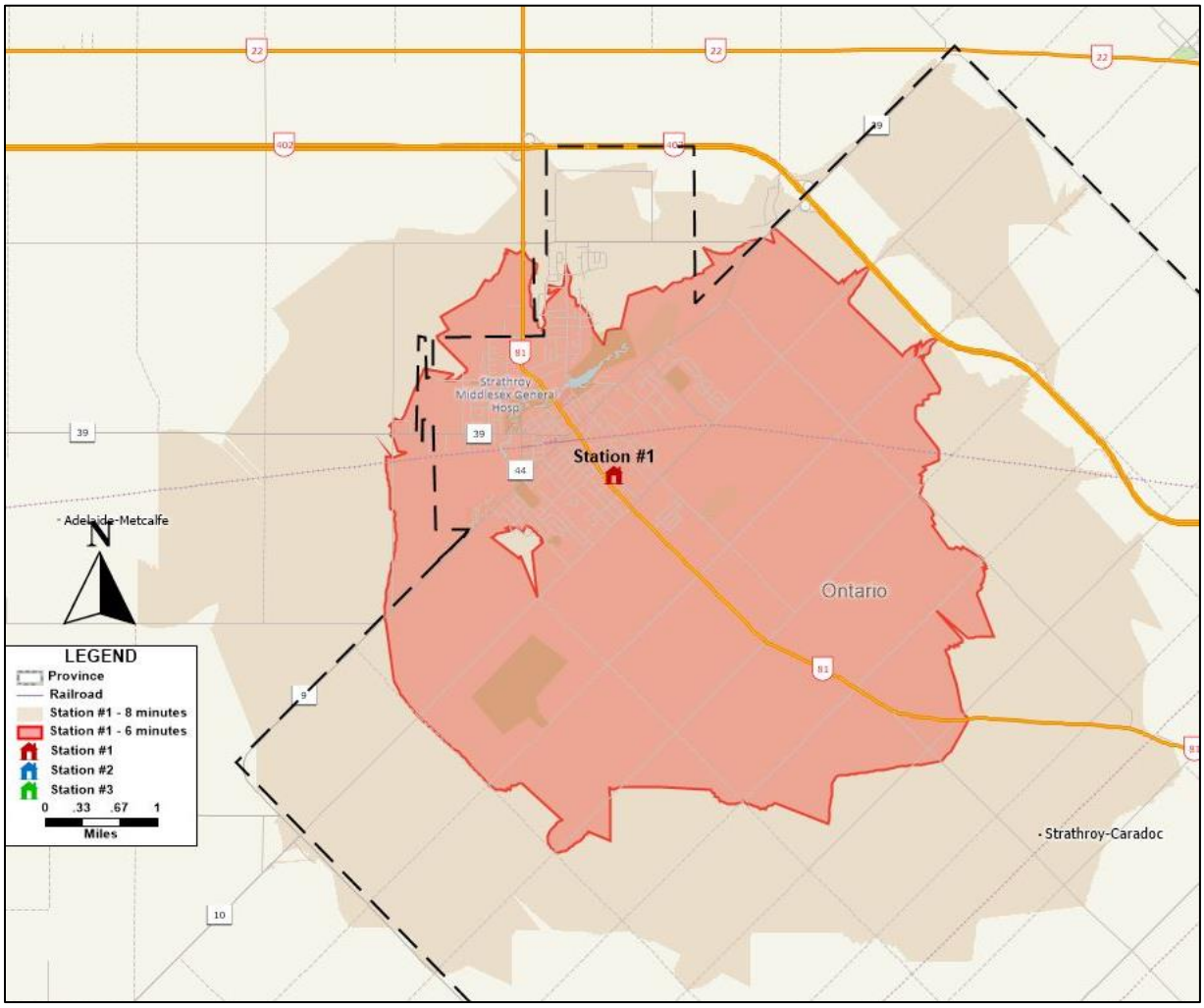
under light traffic conditions and good weather, the fire trucks can reach a further distance than noted.

**Figure 2a: 6- and 8-minute Travel Grid from Current Station #1**




The following map shows the 6- and 8-minute travel grid from the Station #1 option. This option shows greater extension to the south, while the northern border of the municipality has approximately an 8-minute travel time.

**Figure 2b: 6- and 8-minute Travel Grid from Alternate Station #1**




A challenge, however, is the high use rail line that runs through the town of Strathroy, dividing the north from the south. If the fire station is on the north side of the tracks, there is the potential of delay for calls in the south, and vice versa. With the majority of the vulnerable occupancies and other risks such as the high schools and industry being located north of the tracks a consideration needs to be given to addressing this risk.

While both locations have benefits, if the southern location is selected, consideration should be given to a satellite station on the north side of the city. This could be a single bay station with minimal facilities for a single apparatus. The satellite station would reduce the risks of a response being delayed due to a train blocking the tracks and could be built or leased at a very economical cost.

## Station #2 - Solutions

Station #2 in Mount Brydges is landlocked and has no room for expansion. As the community grows and there is a transition to a composite staffing model at the station, there is the ability to adjust the location of the station.

Taking into consideration that Station #3 is also in need of replacement, there would be the opportunity to build one station that could serve Mount Brydges and cover the response requirements over to the hamlet of Melbourne.

A station along County Road 14 (Glendon Dr.) between Christina Road and Rougham Road would ensure a 2–3-minute travel time into the core of Mount Brydges, while providing good north / south access and west access to the western boundary of the municipality.

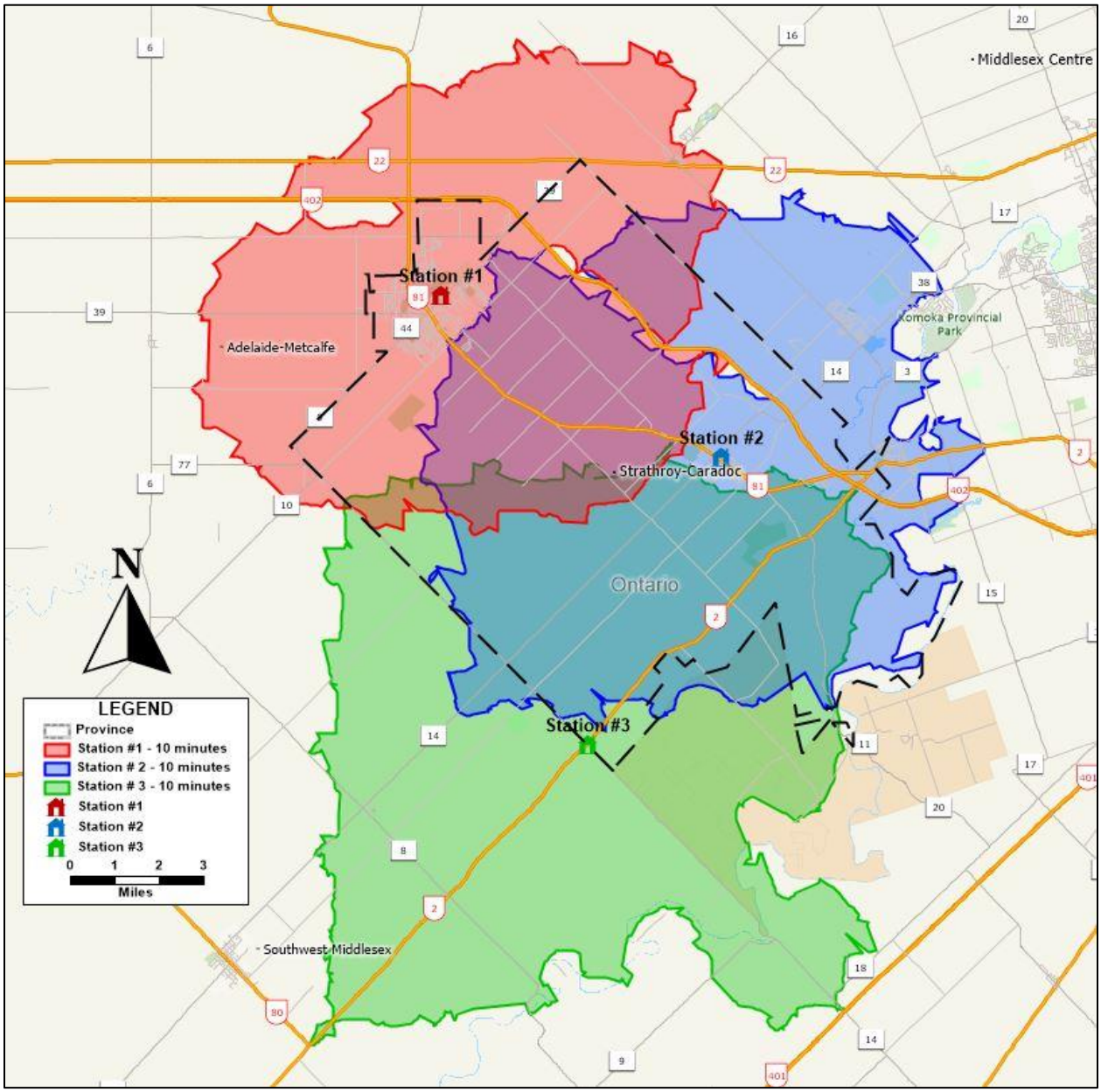
While there would be a 9-minute travel time to Melbourne, the current Melbourne Station had a 9 minute, 50 second 80$^{th}$ percentile turnout time (time for the first truck to leave the station). In other words, a career truck based just west of Mount Brydges would have a similar response time as a volunteer truck based right in Melbourne.

The Melbourne Station averages 48% of its calls within the municipality of Strathroy-Caradoc. From 2018 – 2020, the station averaged 40 responses per year (34 in 2020) with an average of 19 calls within the municipality. This number of calls could be easily incorporated into the response capabilities of Station #2.

Using the NFPA Standard 1720 14-minute response time for a rural response using volunteers within the core of the Strathroy boundaries, the following charts show the travel capabilities using a 10-minute travel time (based on a 4-minute turnout time) for the two station options in the south. The beige area illustrates the area that can be covered within 8 minutes travel.

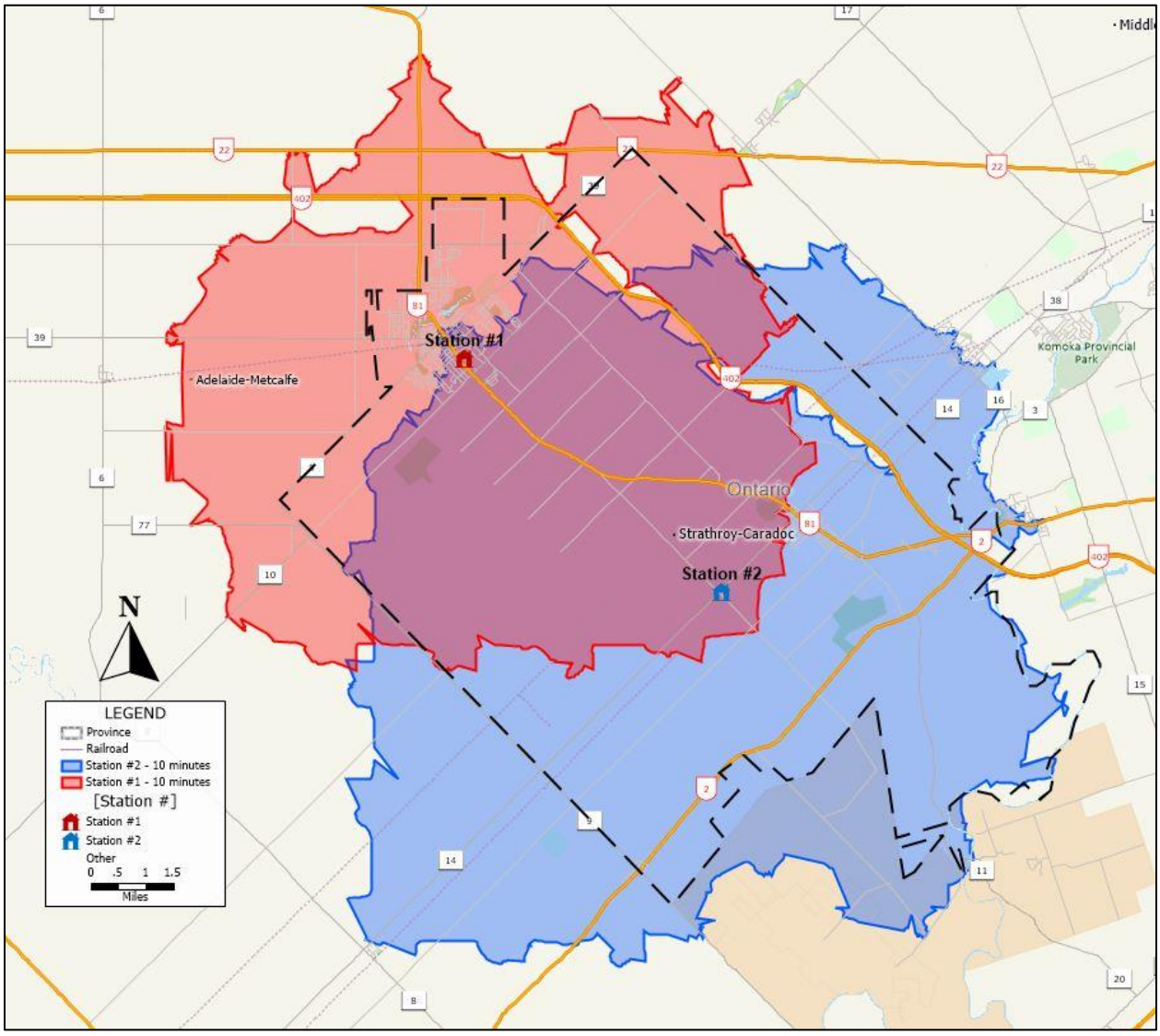
The first map shows the current station locations with a 10-minute travel time. As can be seen, the municipality, with only a small area to the southern border, is covered within a 10-minute travel time. A challenge, however, is that the Melbourne Station (Station #3) has more than a 9-minute (80$^{th}$ percentile) turnout time. Therefore, the area covered by the green Station #3 area does not reflect a realistic response time.

**Figure 2c: 10-Minute Travel Grid from Current Stations**



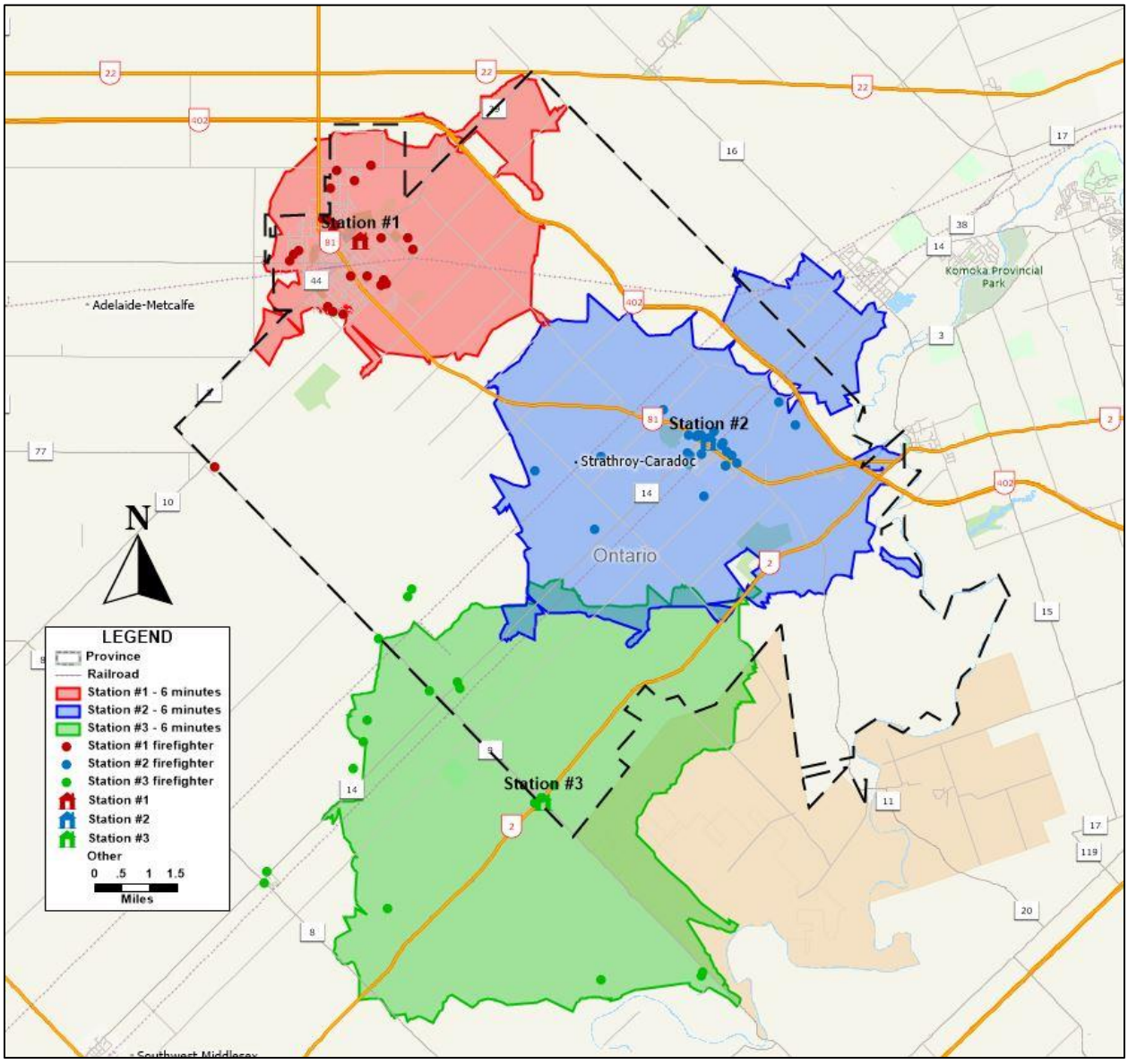

The following map provides a 10-minute travel time from a station located at Glendon Drive and Christina Road. The map clearly demonstrates that the municipality can be covered effectively from a two-station model.

**Figure 2d: 10-Minute Travel Grid from Two New Stations**




When we further examine where the firefighters live in relation to their assigned fire stations, we note very few firefighters live in proximity to Station #3 which contributes to the extended turnout times. Using a 6-minute travel time to the station, the map shows that approximately half of the Station #3 volunteers live more than 6 minutes from the station.

**Figure 2e: Current Stations and Firefighter Home Addresses**




Moving to a two-station model will provide a response coverage to the south of the township that would continue to provide a response standard to the municipality that is equivalent to the current service.

# SECTION 3: CONCLUSION

## 3.0 Conclusion

The municipality has three fire stations that have capacity and structural challenges that are limiting their long-term life span.

### 3.1 Phase 1

Station #1, with the most heavily populated community and highest call demand, and functioning as the headquarters, should be the highest priority for replacement.

With a requirement for the fire station to be in a central location with good access to arterial streets, there is limited choice available as much of the land is already developed. The municipality owns two pieces of land within the developed area of Strathroy that would be suitable.

The first is the property the current fire station is located on. This location has provided good response to the community.

The second location is on Frances Street to the north of the police station. There is adequate space for the station and headquarters facility.

It is further noted that the police service has reached its capacity in its current building and that there is opportunity to share space (and potentially costs) between the fire service and the police service. The sharing of space could have efficiencies rather than having each agency expand independently and duplicate space designations. This could include shared training and meeting rooms, Emergency Operations Centre, fitness facilities, secure parking facilities, etc. Further, with the advent of NG-911 and the expansion of dispatch services provided by the police service, an expanded and purpose-built dispatch centre could be included in a shared facility.

The municipality would be able to address both the fire service needs as well as the growing police service needs.

From a response location, both sites have very similar capacities, however, a station to the south has a small but real potential to encounter a delayed response due to a train.

This project should take place in the short- to mid-term (1-6 years).

## 3.2 Phase 2

Phase 2 of the fire service station plan would be to procure land on Glendon Drive between Christina Road and Rougham Road for a new Station #2. This station would adequately serve both Mount Brydges and Melbourne.

The new station could be built to accommodate a volunteer deployment initially but be designed to expand to accommodate career firefighters in the more distant future.

With this model, the municipality of Southwest Middlesex would be required to cover a larger portion of their own municipality as the Melbourne Station currently covers a large portion west of County Road 9.

This project should take place in the long-term (7-10 years).