Community Risk Profile

Municipality of Thames Centre

Fire & Emergency Services

Prepared and Reviewed By:
308 Consulting & Strategy Group Inc.
and Emergency Services Strategy & Solutions Inc.

June 4, 2024

Nick Dorken
Fire Chief
Municipality of Thames Centre
4305 Hamilton Road
Dorchester, ON N0L 1G3
Ph. 519-268-3928

Re: Community Risk Profile & Master Fire Plan

Dear Chief Dorken,

The 308 Consulting & Strategy Group Inc. team is pleased to submit the completed Community Risk Profile and Master Fire Plan, developed to guide the Municipality of Thames Centre from 2024 to 2034. The purpose of these documents is to provide a comprehensive evaluation of the community's fire risks and to outline a strategic plan to enhance the fire department's effectiveness, safety, and operational readiness.

Our final report includes 14 recommendations derived from the Community Risk Profile. Additionally, there are 17 recommendations developed through our observations and analysis during the development of the Master Fire Plan. These recommendations cover a wide range of areas, including training, equipment, staffing, community engagement, and emergency response protocols.

We would like to extend our heartfelt thanks to you and your staff for your dedication to the community and your invaluable involvement in this consulting project. Your cooperation and insights were crucial in developing these comprehensive plans, and we are confident that their implementation will significantly benefit the Municipality of Thames Centre.

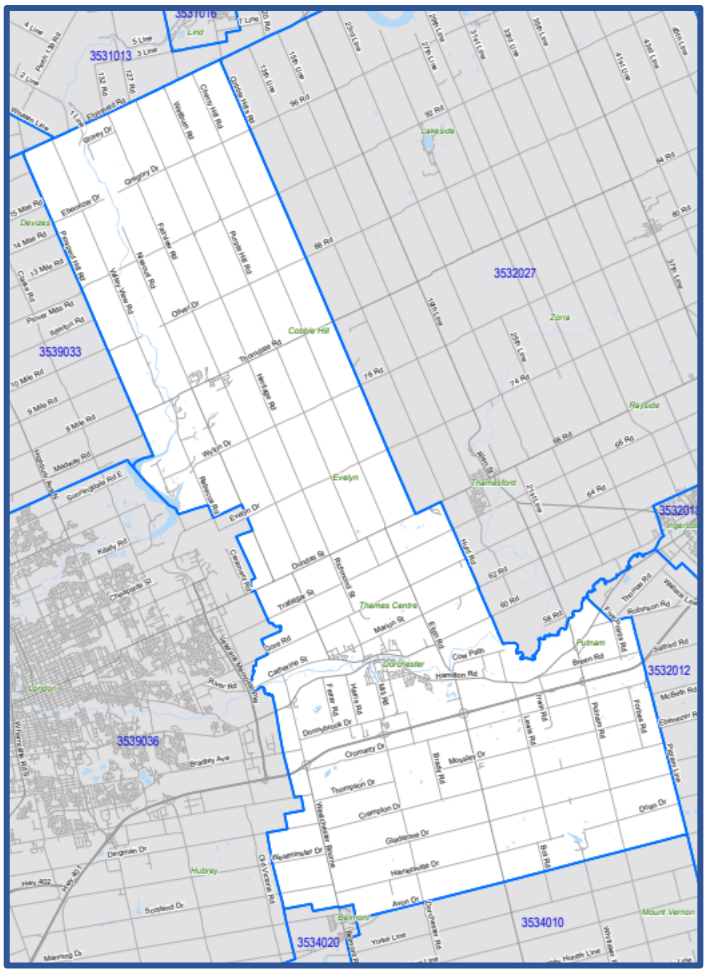
Should you have any questions or require further information, please do not hesitate to contact us. We look forward to continuing our partnership and supporting the Municipality of Thames Centre in its commitment to fire safety and community well-being.

Sincerely,

[redacted]

Blaine Lucas | AEMCA, CMM III, BA, MPA |
President & Chief Executive Officer
blainelucas@308consulting.ca

Municipality of Thames Centre



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Executive Summary

The Municipality of Thames Centre is an agriculturally based community, anchored by two growing urban settlement centres of Dorchester and Thorndale. It is conveniently located in Southwestern Ontario, and easterly adjacent to the City of London, where residents can enjoy "country living" while living nearby metropolitan amenities and employment lands.

As the Thames Centre community is expected to grow, there will be continued expectations, reliance and increased demands on municipal services. This includes a greater dependency and growing demand on the prompt and effective response from the volunteer fire protection service.

This Community Risk Assessment (CRA) was prepared to provide municipal officials with information, in order that, municipal officials can make informed decisions regarding the volunteer fire protection services.

The CRA is structured into the following "Profiles" as required by Ontario Regulation 378/18:

- Geographic Profile
- Building Stock Profile
- Critical Infrastructure Profile
- Demographic Profile
- Hazard Profile
- Public Safety Response Profile
- Community Services Profile
- Economic Profile
- Past Loss and Event History Profile

As evident in the recent Strategic Plan adopted by the municipality, the fire protection service was ranked the highest in importance of all local municipal services. Being a volunteered based fire and emergency services department, the municipality needs to strategically grow the department in parallel with a growing population and their associated community expectations.

Overall, based on the observations of the CRA Profiles, there are 14 recommendations that have been forwarded for inclusion into the Master Fire Plan.

Legislation

Provincial

Based on the *Fire Protection and Prevention Act*, the associated Ontario Regulation 378/18 requires all municipalities to:

(a) complete and review a **community risk assessment**; and
(b) use its community risk assessment to inform decisions about the provision of the municipality's fire protection services.

This Community Risk Assessment must be completed every 5 years.

As per the Ontario Regulation 378/18, the following profiles must be included in the Community Risk Assessment:

- Geographic Profile
- Building Stock Profile
- Critical Infrastructure Profile
- Demographic Profile
- Hazard Profile
- Public Safety Response Profile
- Community Services Profile
- Economic Profile
- Past Loss and Event History Profile

Municipal

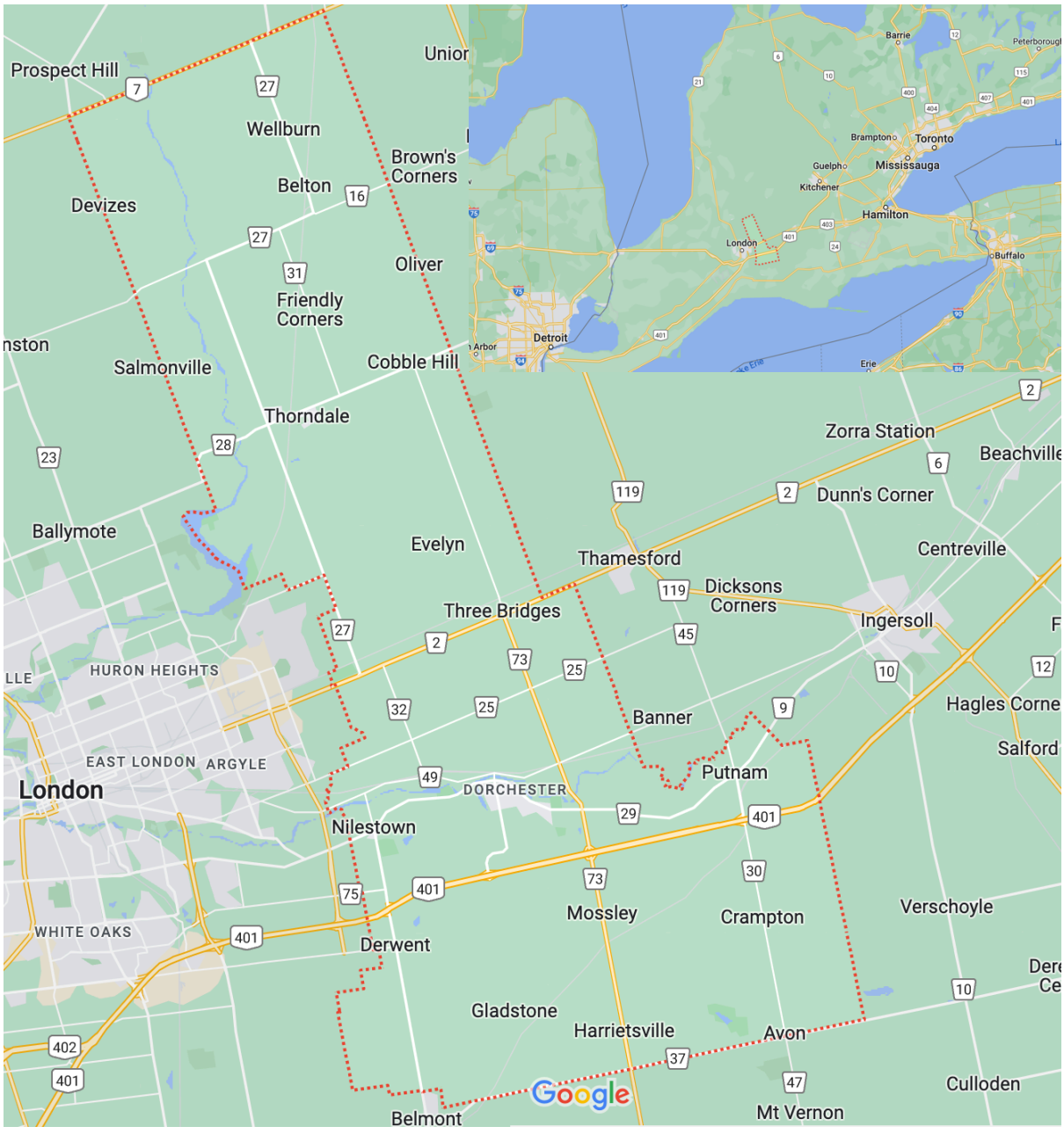
The Municipality of Thames Centre has adopted BY-LAW NO. 15-2015 on February 18, 2015. The bylaw is to establish, maintain and operate a fire department under the direction of the Council, as per Section 5 of *Fire Protection and Prevention Act* (as amended). The bylaw authorizes the fire department to engage in the following emergency services:

- Fire Suppression / Search and Rescue
- Fire Prevention
- Fire Safety Education
- Training of Persons involved in the provision of Fire Protection, Rescue and Emergency Services
- Rescue and Emergency Services and the delivery of those services based on the expertise and training of fire personnel
- Medical First Response according to Agreement with Ontario Ministry of Health
- Water Entry Ice and Water Rescue, Water Entry Still Water Rescue, and Water Entry Swift Water Rescue
- Personal Injury / Auto Extrication at Motor Vehicle Crashes

Geographic Profile

Location

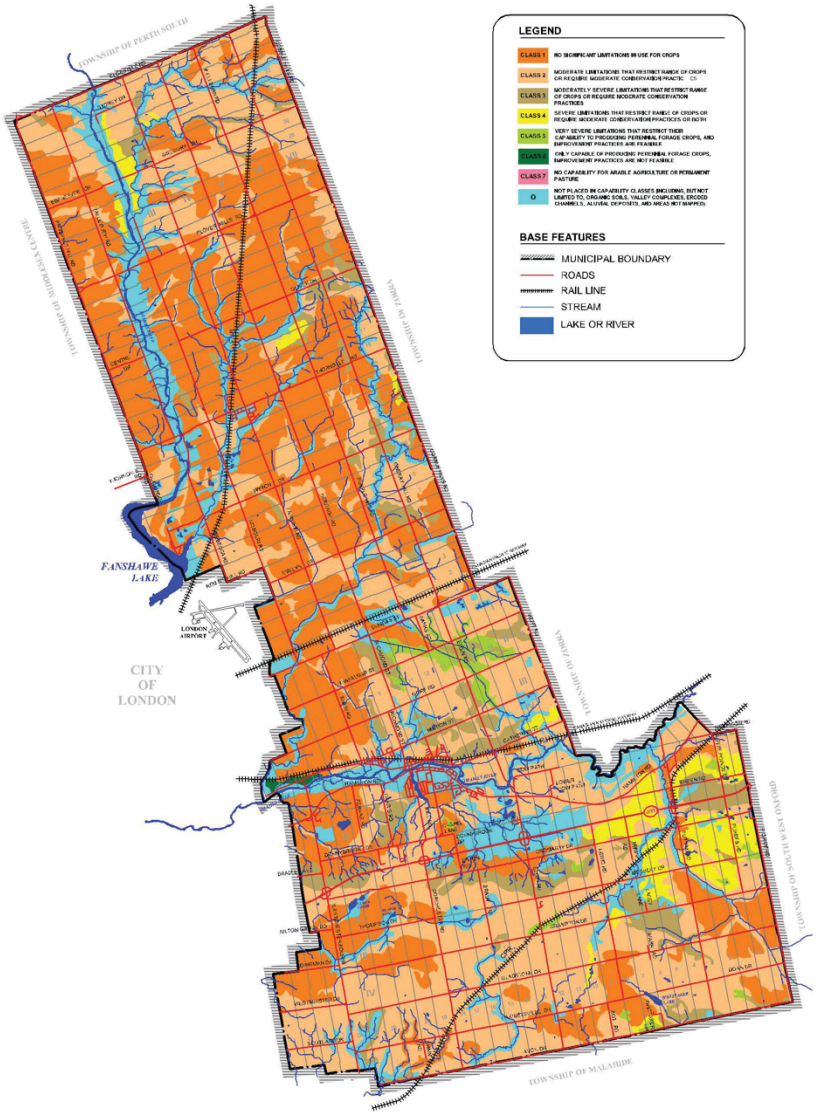
Created on January 1, 2001, the Municipality of Thames Centre is a local municipality within the County of Middlesex, located in Southwestern Ontario.



As per the current Thames Centre Official Plan (Ontario Municipal Board decision on January 24, 2006), lands designated "Residential" primarily exists within the Urban Settlement Areas of Dorchester and Thorndale.

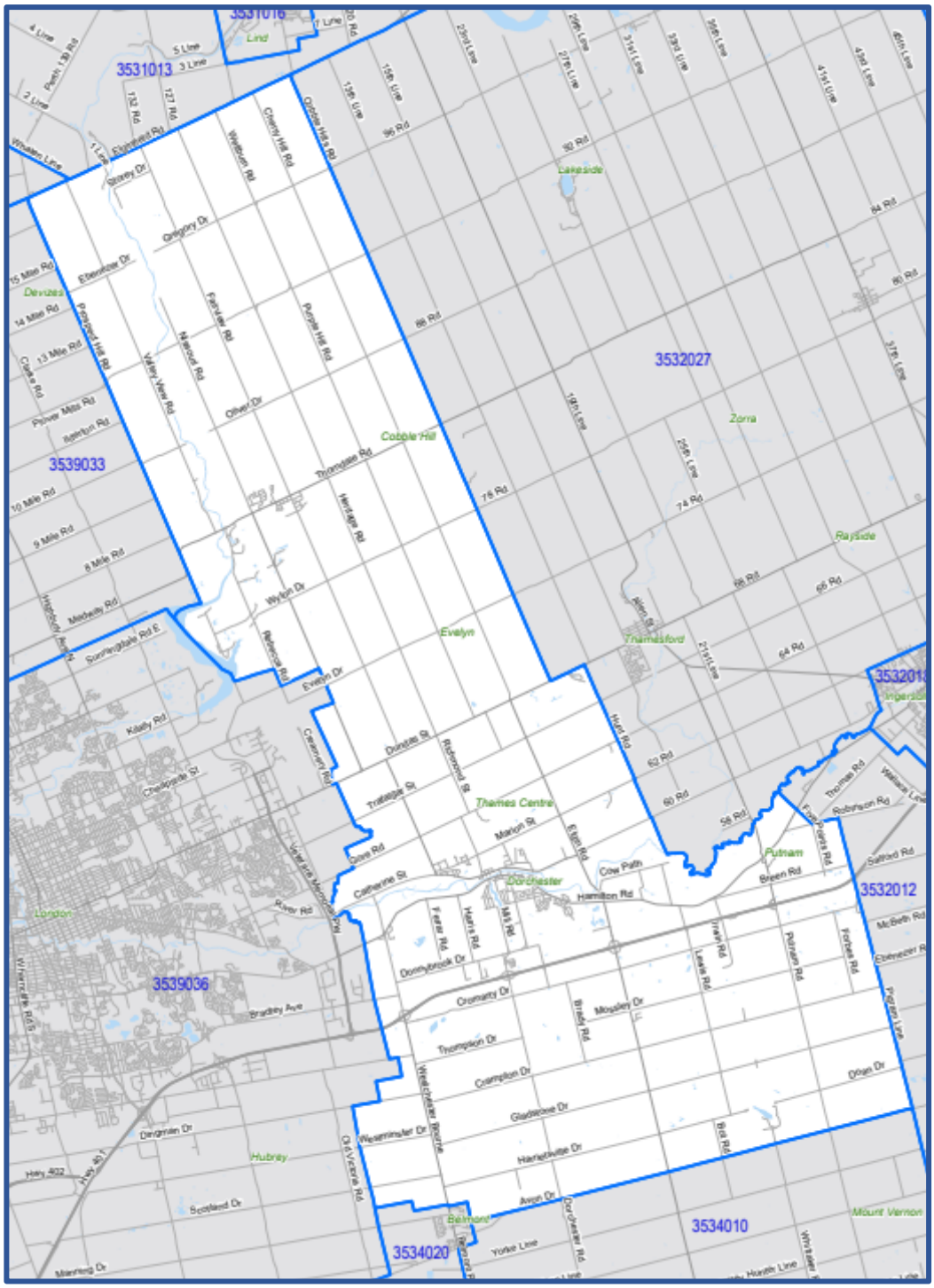
The Official Plan also identifies Hamlet areas with residential designations; however the hamlets have been developed on private septic systems and wells. The potential for contamination as a result of seepage from septic systems into water wells; the cumulative impact of development, and the inability to economically provide full services to the Hamlets have been recognized by the Municipality as serious concerns. The Municipality, therefore, finds it prudent to place severe restrictions on new development within the Hamlets and to strictly limit future expansion.

As evident if the diagram below, the municipality consists primarily of Class 1 and 3 of agricultural lands:



As per the 2021 Canada Census, Thames Centre had a population of 13,980 living in 5,186 of its 5,316 total private dwellings, a change of 6% from its 2016 population of 13,191.

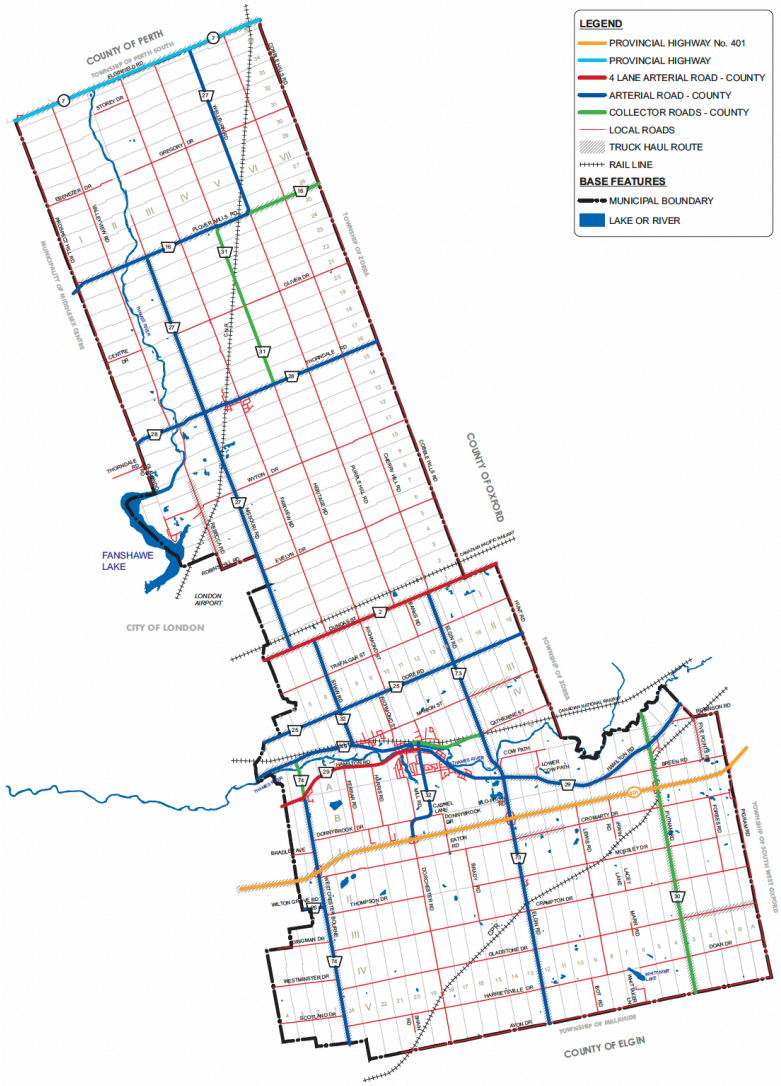
With a land area of 433.99 km2 (167.56 sq mi), it had a population density of 32.2/km2 (83.4/sq mi) in 2021.



Road Network

In an east-west alignment, provincial Highway # 401 transects the municipality (just south of Dorchester). Further, the northern municipal border is aligned with provincial Highway # 7.

In addition, there are primary "county" roads maintained by the County of Middlesex (classified as 4-lane arterial roads, arterial roads and Collector roads) and primary "local" roads maintained by the Municipality of Thames Centre. Thames Centre is responsible for approximately 180 km of gravel roadways and 180 km of hard surface roadways:



"Truck Haul Routes" (other than agricultural land use vehicles) have been designated on Provincial Highways # 401 and # 7 and County Roads 2, 16, 25, 28, 30, and 73. There are limited truck haul routes on portions of County Roads 27, 29, 32, 49 and 74, as well as limited portions of certain local roads within the Municipality.

Bridges and Culverts

There is a predominate cultural significance of bridges in Thames Centre. This infrastructure is embedded in the culture of the community, where the municipality hosts BridgeFest to celebrate their community connectivity.

As per the Thames Centre Asset Management Plan (2019), bridges & culverts represent a critical portion of the transportation network, facilitating a roadway and/or walkway over a physical obstacle. Thames Centre has 66 structures that have a span of 3 meters or more and are therefore categorized as a bridge or a culvert asset.

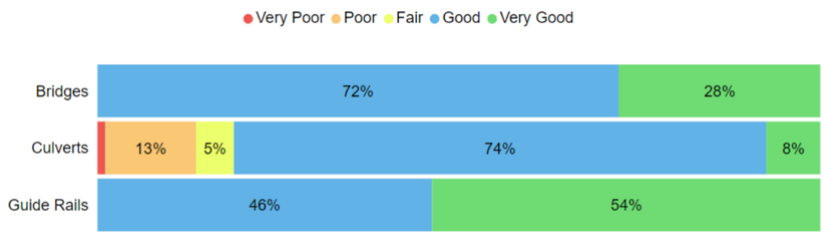
The Transportation Services team in the Public Works Department is responsible for the maintenance of all bridges and culverts located across municipal roads, with the goal of keeping structures in an adequate state of repair and minimizing service disruptions. The County of Middlesex and the Ministry of Transportation is respectively responsible for bridges and culverts located on county roads and provincial highways.

The Thames Centre Fire department is reliant on proper maintenance of roads, bridges and culverts to ensure effective emergency responses.

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Bridges & Culverts inventory:

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	30	CPI Inflation (2018 OSIM report)	$17,004,352
Culverts	36	CPI Inflation (2018 OSIM report)	$6,579,145
Guiderails	11	CPI Inflation (2018 OSIM report)	$1,012,797
			$24,596,294

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Bridges	80%	Good	89% Assessed
Culverts	65%	Good	100% Assessed
Guiderails	82%	Very Good	50% Assessed
	76%	Good	



Overall, bridges have been designated as 100% in good and very good condition, with 82% of the culverts receiving this rating. Public Works staff need to continue monitoring bridges and culverts to ensure unobstructed responses for municipal services when responding to emergencies.

Waterways

There are several waterways throughout the municipality as illustrated in the road network map above. The primary waterway is the Thames River, which travels from the west to east across the municipality, within the northern areas of Dorchester. The other primary waterway is the North Thames River, traveling south to north, adjacent to the east of Thorndale.

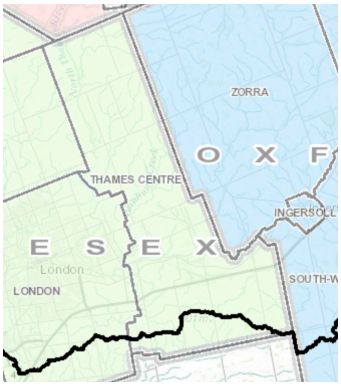
North Thames River from Plover Mills Rd. Bridge

Thames River from Dorchester Rd. Bridge

Bridges spanning Thames River in Dorchester.

Thames Lake along eastern border of Thames Centre.

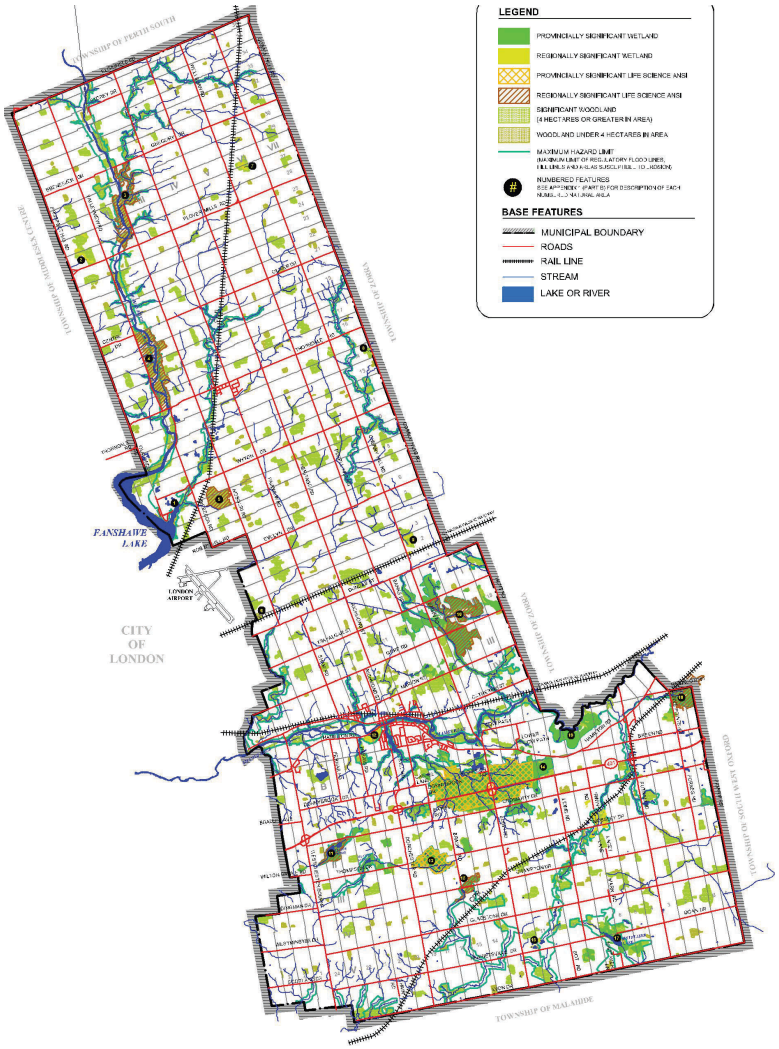
The waterways and natural heritage features in Thames Centre are regulated by two conservation authorities: Upper Thames River Conservation Authority (UTRCA) and the Kettle Creek Conservation Authority (KCCA).



UTRCA

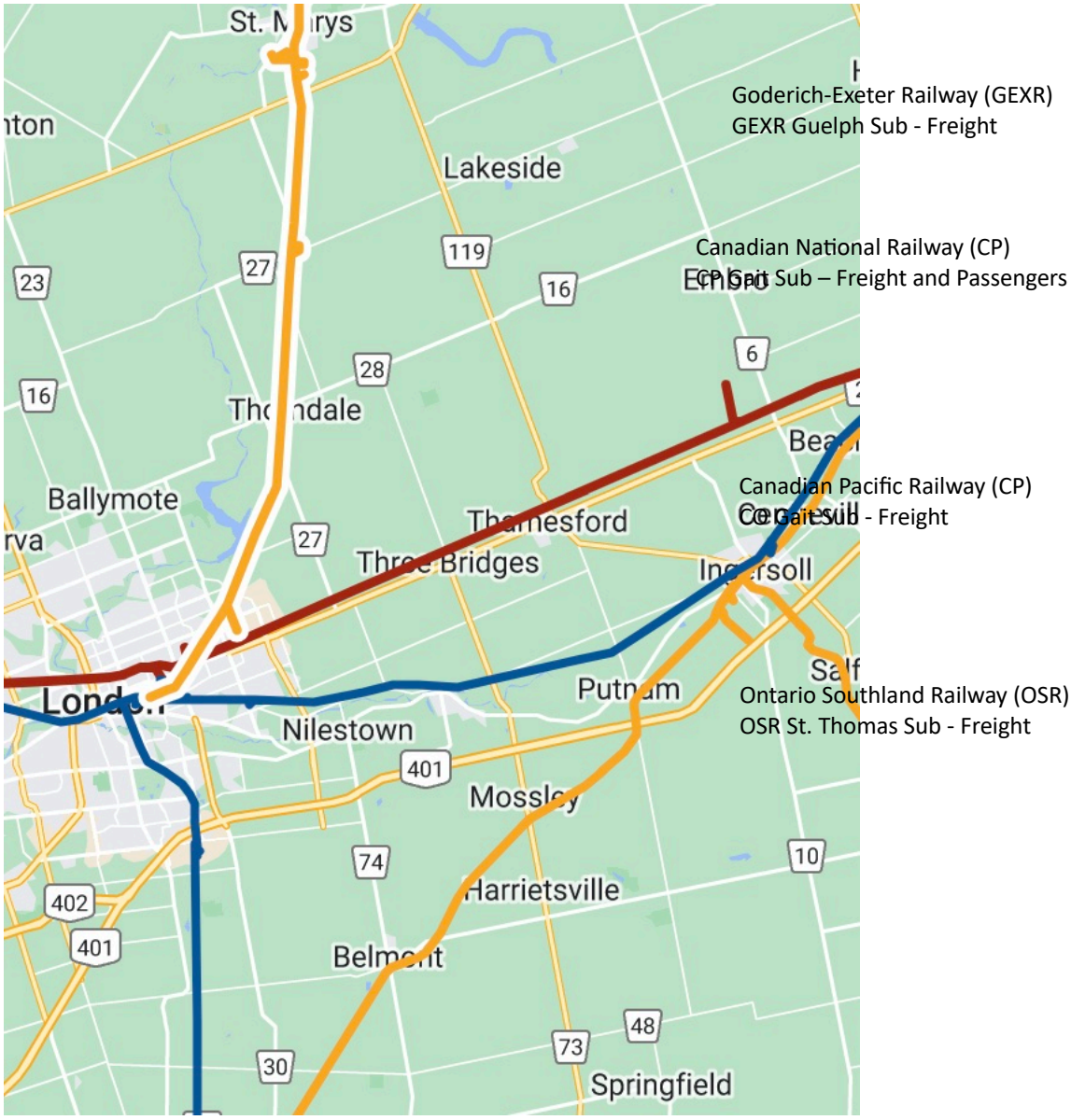
KCCA

The Natural Heritage Features identified in the Thames Centre Official Plan are depicted below:



Railways

There are several main railways traversing the municipality, where both freight and passenger trains are utilized.



In case of an emergency (such as a derailment, spill, collision), Thames Centre Fire Department has the capacity to contact the respective railway company directly or via Fire Communications. Given the significant number of railway kilometers and the number of at-grade railway crossings, the Fire Department needs to be aware and trained in appropriate emergency response to railway emergencies.

Railway companies have their own emergency response teams; thus it is important for the local fire departments to partner with the railway companies in their on-scene Incident Command.

(Note to Fire Training Officers: As part of the Emergency Response and Responder Safety Document Consolidation Plan (consolidation plan) as approved and amended by the NFPA Standards Council, NFPA 470 is a combination of Standards NFPA 1072, NFPA 472, and NFPA 473).

Building Stock Profile

Section 3 of the Ontario Building Code (OBC) classifies 6 categories (and 13 associated divisions) pertaining to all buildings. The chart below defines these categories and divisions:

Item	Group	Division	Description
1	A	1	Assembly occupancies intended for the production and viewing of the performing arts.
2	A	2	Assembly occupancies not elsewhere classified in Group A.
3	A	3	Assembly occupancies of the arena type.
4	A	4	Assembly occupancies in which occupants are gathered in the open air.
5	B	1	Detention occupancies.
6	B	2	Care and treatment occupancies.
7	B	3	Care occupancies.
8	C		Residential occupancies.
9	D		Business and personal services occupancies.
10	E		Mercantile occupancies.
11	F	1	High hazard industrial occupancies.
12	F	2	Medium hazard industrial occupancies.
13	F	3	Low hazard industrial occupancies.

This OBC classification is further developed by the Ontario Fire Marshall and Emergency Management (OFMEM) into a Risk Assessment and associated fire prevention to reduce the identified risks:

OBC Group	OFMEM Definition	OFMEM Identified Risks
"A" Assembly Occupancies	An assembly occupancy is defined as one that is used by a gathering of persons for civic, political, travel, religious, social, educational, recreational or like purposes or for the consumption of food or drink.	Assembly buildings are often occupied by a large number of people and may contain high quantities of combustible furnishings and decorations. Occupants are generally unfamiliar with the building's exit locations and may not know how to react in the event of an emergency. Low light conditions are inherent to some of these occupancies and can contribute to occupant confusion during an evacuation. Numerous examples exist of disastrous events that have occurred throughout the world, resulting in multiple fire fatalities in these occupancies. Therefore, these facilities warrant special attention. Accordingly, it is paramount to ensure that maximum occupant load limits are not exceeded, detection is available, an approved fire safety plan is in place and adequate unobstructed exits/means of egress are readily available.
OFMEM Preventative Measures for Group A		▪ Regular fire prevention inspection cycles ▪ Automatic fire detection and monitoring systems ▪ Approved fire safety plan and staff training ▪ Pre-planning by fire suppression staff
"B" Care or Detention Occupancies	A care or detention occupancy means the occupancy or use of a building or part thereof	In addition to the presence of vulnerable occupants, these occupancies may contain quantities of various flammable/combustible liquids and gases, oxidizers and combustible furnishings that will impact the intensity of the fire

	by persons who: Are dependent on others to release security devices to permit egress; Receive special care and treatment; or Receive supervisory care	if one should occur. The evacuation or relocation of patients, residents or inmates to an area of refuge during an emergency poses additional challenges in these facilities. It is essential to ensure that properly trained staff is available and prepared to quickly respond according to the facility's approved fire safety plan.
OFMEM Preventative Measures for Group B		▪ Regular fire prevention inspection cycles ▪ Automatic fire detection and monitoring systems ▪ Approved Fire Safety Plan and staff training ▪ Pre-planning by fire suppression staff
"C" Residential Occupancies	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 to receive medical care or treatment or are not involuntarily detained.	In Ontario, residential occupancies account for 70% of all structural fires and 90% of all fire deaths. Residential units that are in multi-unit buildings, including secondary units in a house, pose additional risks due to egress and firefighting accessibility challenges. The Municipality of Thames Centre currently faces risks associated with residential buildings due to modern lightweight construction methods. These methods, while economically advantageous, often result in structures, particularly roofs, that may not support substantial loads in the event of a fire. This poses a significant risk to fire suppression staff who may need to access these roofs for essential tasks such as ventilation or rescue operations. The structural integrity of these roofs can be compromised quickly under fire conditions, creating hazardous situations for firefighters. Although building height restrictions have been maintained at four stories, which allows the fire department to manage without an aerial apparatus, the inherent risks associated with lightweight construction still exist. Ground ladders, while currently effective, may present safety challenges even within the existing height limitations. Looking ahead, the Municipality anticipates growth over the next decade, which could lead to the construction of larger and taller buildings. As building heights increase, ground ladders may become less effective and potentially unsafe for providing egress from top floors or roofs of buildings exceeding three stories. In the event of a fire, an aerial apparatus would offer a crucial benefit. It can provide safe access and egress for fire suppression personnel and occupants, particularly when dealing with the challenges of modern lightweight construction methods. Investing in an aerial truck would significantly enhance the fire department's ability to respond effectively to fires in taller residential buildings, ensuring the safety of both fire suppression staff and residents.

OFMEM Preventative Measures for Group C		▪ Home smoke alarm programs ▪ Public education programming including home escape planning ▪ Retro-fit and compliance inspection cycles for O.F.C. compliance ▪ Pre-planning by fire suppression staff ▪ Fire Drills as required by the O.F.C.
"D" Business & Personal Services	A business and personal services occupancy is defined as one that is used for the transaction of business or the rendering or receiving of professional or personal services.	Many office buildings are occupied by a large number of people during business hours and contain high combustible content in the form of furnishings, paper, books, computers and other office equipment/supplies. Those that are located in a high-rise building pose additional risks due to egress and firefighting challenges.
OFMEM Preventative Measures for Group D		▪ Regular fire prevention inspection cycles to maintain O.F.C. compliance ▪ Targeted fire prevention inspections for O.F.C. retrofit compliance ▪ Staff training in fire prevention and evacuation procedures ▪ Public education programs ▪ Pre-planning by fire suppression staff
"E" Mercantile Occupancies	A mercantile occupancy is defined as one that is used for the displaying or selling of retail goods, wares or merchandise.	Larger mercantile occupancies such as department stores are generally occupied by a large number of people and contain high quantities of combustibles in the form of merchandise, furnishings and decorations. Customers may be unfamiliar with the building's exit locations and not know how to react in the event of an emergency. Additional hazards will be present in "big box" type stores that sell and store large volumes of combustible materials in bulk. These stores generally have similar properties to industrial warehouses with the additional hazard of higher number of occupants.
OFMEM Preventative Measures for Group E		▪ Regular fire prevention inspection cycles ▪ Automatic fire detection and monitoring systems ▪ Approved Fire Safety Plan and staff training ▪ Pre-planning by fire suppression staff
"E" Industrial Occupancies	An industrial occupancy is defined as one for the assembling, fabricating, 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 the potential for rapid fire growth.	These occupancies constitute a special fire hazard due to the high levels of combustible, flammable or explosive content and the possible presence of oxidizing chemicals and gases within them. Processing and other activities that involve various ignition sources often occur in these occupancies. The lack of security during non-operational hours also makes them susceptible to incendiary type fires. Industrial fires generally involve large quantities of combustible materials and potentially result in large financial losses (e.g. building, contents) and significant damage to the community's environment and economic well-being (e.g. loss of jobs).
OFMEM Preventative Measures for Group F		▪ 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 (e.g., fire alarm systems, heat detectors) ▪ Installation of automatic sprinkler systems ▪ Approved Fire Safety Plans ▪ Preplanning by fire suppression staff ▪ Fire extinguisher training

(Note: Given the significant agricultural sector within Thames Centre, large buildings used for agricultural purposes should be identified as they may contain combustible and other hazard materials.)

Residential – Category C

Residential homes in the municipality are primarily concentrated located in the urban settlement areas of Dorchester and Thorndale. Within the Official Plan, there are nine (9) hamlets with residential houses. These hamlets are identified as: Wellburn, Waubuno, Nilestown, Putnam, Mossley, Gladstone, Crampton, Harrietsville, and Avon. According to the 2021 Canada Census, the types of residential homes, includes:

Type of Private Dwelling	Number	Percentage
Single-detached house	4,615	89.0
Semi-detached house	120	2.3
Row house	115	2.2
Apartment or flat in a duplex	20	0.4
Apartment in a building that has fewer than five storeys	195	3.8
Apartment in a building that has five or more storeys	15	0.3
Other single-attached house	10	0.2
Movable dwelling (such as mobile homes)	90	1.8
Total	5,180	100.0

It should be noted that there no aerial fire apparatus within the Thames Centre fleet to respond to existing buildings of greater than 5 stories. As the municipality grows, and apartment buildings are approved, the need for an aerial ladder vehicle will increase and the municipality should plan accordingly.

Other Categories

At the writing of this report, the Geographical Information Systems (GIS) at the municipality have not categorized their building stock into the OFC and OFEM classifications. As a result, there is limited awareness and information on building classifications provided to the fire department when dispatched to an emergency scene.

The Fire Department should partner with the Planning and Development Department, GIS, and County IT staff, to develop a building stock database and associated maps. Further, a robust fire prevention program would assist in identifying building stock.

Operationally, upon arrival to an emergency scene, there is greater dependence on the first arriving crew needs to "size up" of the emergency and determine what building structure type (if any) is involved with the emergency.

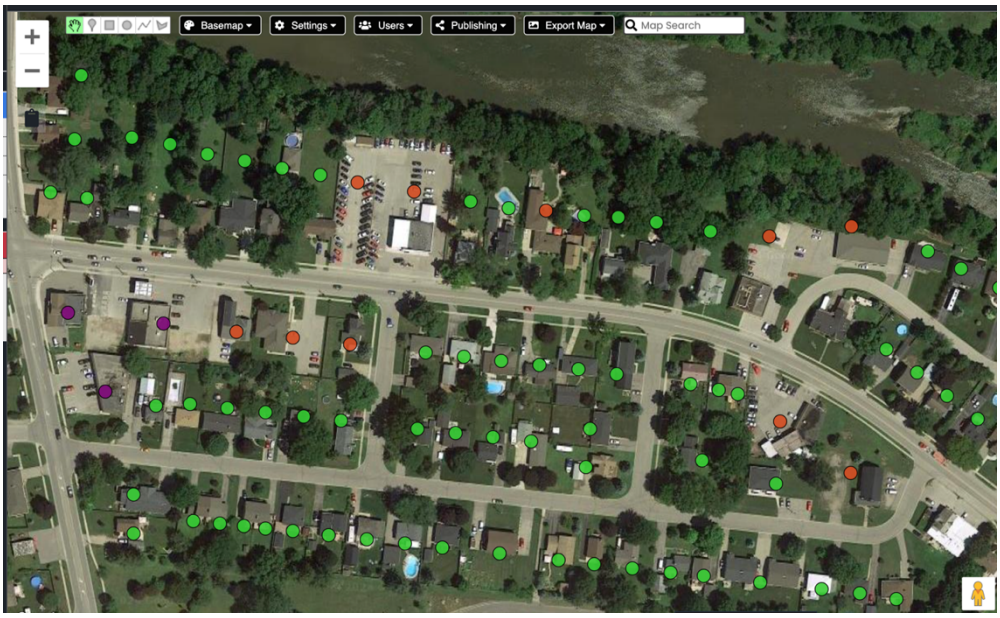
(Sample) Building Stock Map:

Where:

Category C: Residential

Category A: Assembly

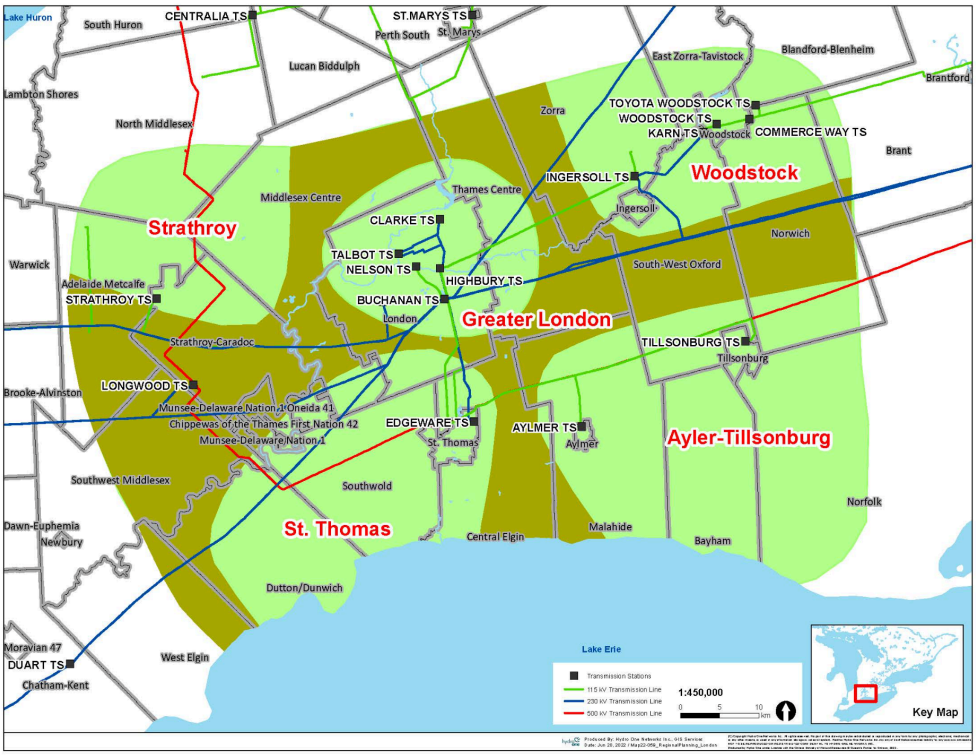
Category D: Business and Personal Services



Critical Infrastructure Profile

Electrical Distribution

The Municipality of Thames Centre has four primary electrical transmission lines across the area, two 115 kV lines and two 220 kV lines, as depicted by the map below:



The local distribution of electrical power in Thames Centre is operated independently by Hydro One. Hydro One communicates any power outages via their on-line Outage Map, Outage Alerts via mainstream and social media platforms, and the mobile phone Hydro One App. Power outages are updated every 10 minutes , 24/7.

In case of an emergency, Thames Centre Fire Department has the capacity to contact Hydro One directly or via Fire Communications.

Water Distribution

The Municipality of Thames Centre is responsible for the water supply, storage facilities and the distribution system; as well as wastewater treatment, pumping stations and the sewer collection system.

The Thames Centre Water and Wastewater Master Plan was last updated in September 2019. As per the Master Plan, it was identified that in both the Dorchester and Thorndale urban areas, there was sufficient capacity to provide adequate pressures under average day and peak hour conditions.

However:

- In Dorchester, the primary issues relates to the system's ability to provide adequate fire flow protection to key areas, such as the northwest industrial lands and southwestern development area.
- The following diagram illustrates the existing water network and the preferred upgrades that are recommended for in Dorchester:

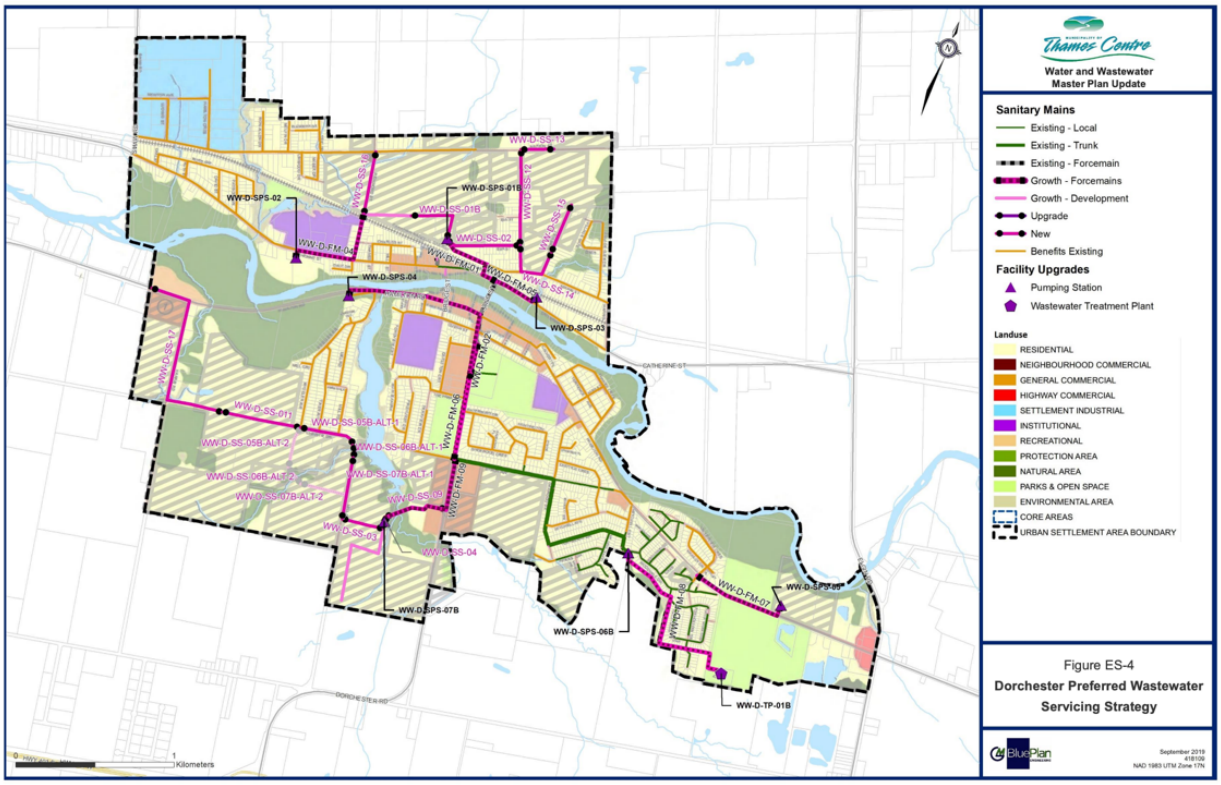
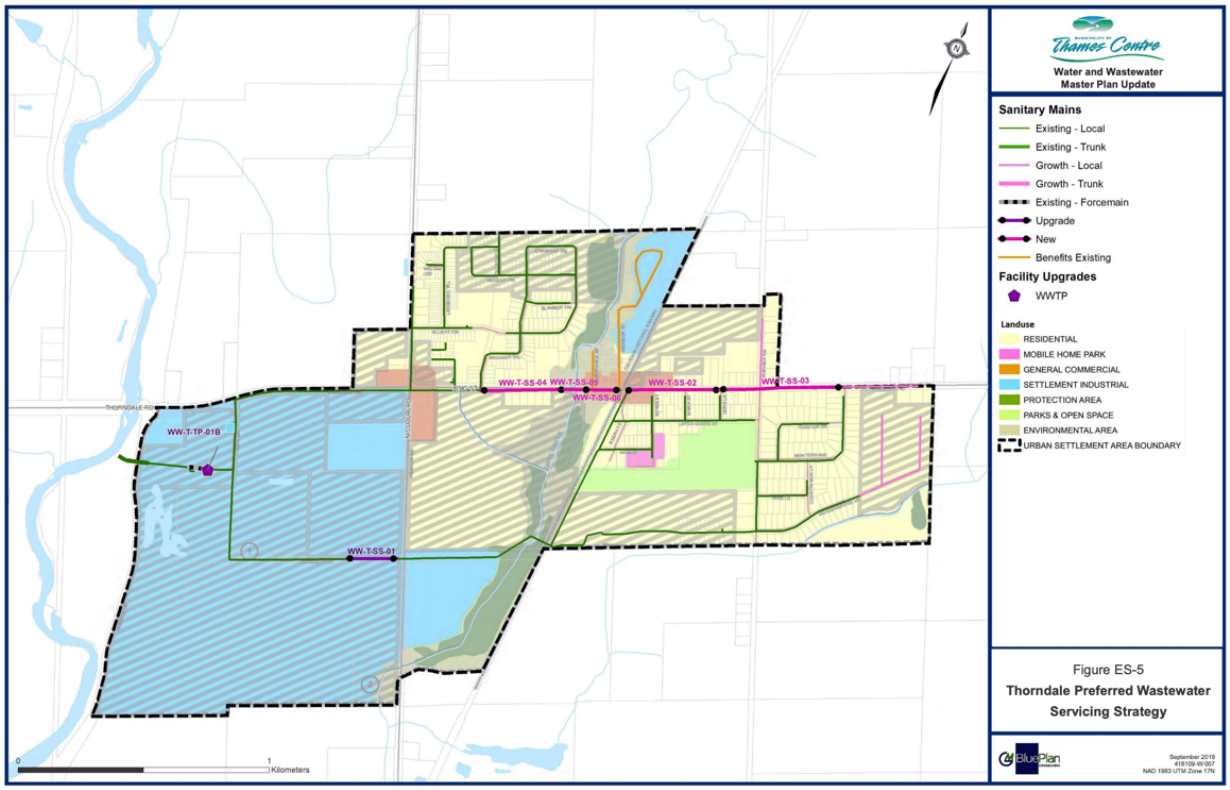


Figure ES-4
Dorchester Preferred Wastewater Servicing Strategy

- In Thorndale, there also exists primary issues related to the system's ability to provide adequate fire flow protection to the southwest industrial area and the Harrison Street industrial area.
- The following diagram illustrates the existing water network and the preferred upgrades that are recommended for in Thorndale:



Further, in the event that the Highway # 401 corridor lands are developed to support either commercial or industrial employment lands, upgrades to the Dorchester water system will be required.

In response the municipality has identified a number of opportunities to address adequate fire flow protection.

Given the insufficient fire flow issues to specific areas, the Thames Centre Fire and Emergency Services Department will need to continuously train, utilize, and upgrade their tanker system, where water is transported to the emergency scene by emergency vehicles.

This water distribution by emergency personnel and equipment is also an essential requirement to combat fire suppression in the vast rural areas of the municipality .

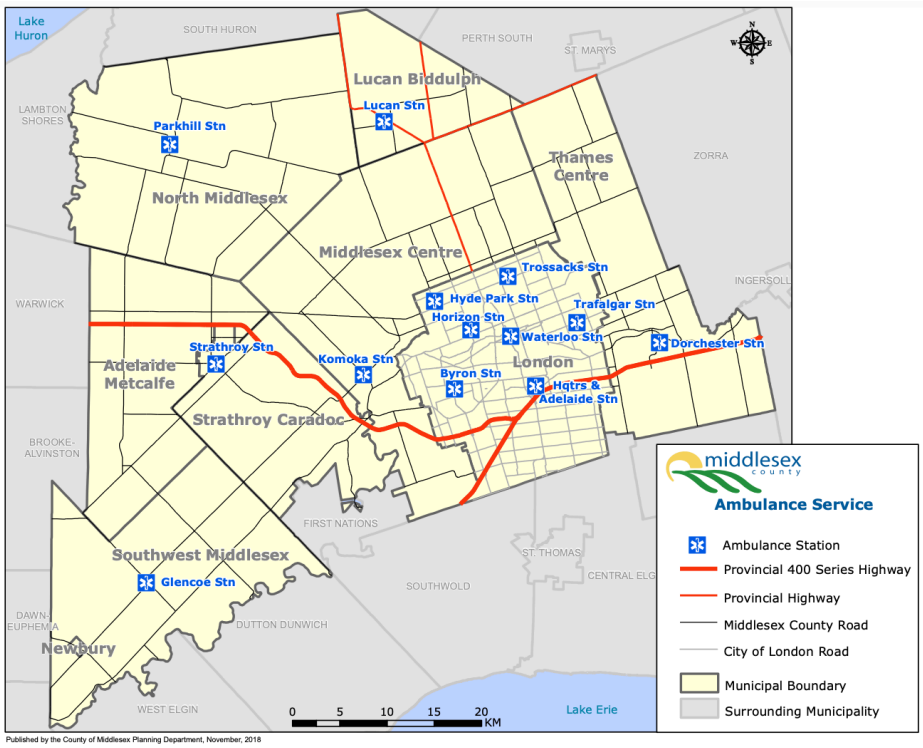
Hospitals and Paramedic Services

Located adjacent to the City of London, Thames Centre has access to four primary acute medical care facilities. These medical care facilities are: London Health Sciences Centre- Victoria Hospital; London Health Sciences Centre- Children's Hospital; London Health Sciences Centre- University Hospital; and St Joseph's Health Care Hospital.

For emergency services, Thames Centre is dependent on Middlesex-London Paramedic Services to provide pre-hospital emergency care, and emergency transportation to the nearest hospital's emergency department.

The distance from Dorchester to Victoria Hospital is about 15 kms and the distance from Thorndale to University Hospital is about 21 kms.

Another option is Alexandra Hospital in Tillsonburg, located beyond the west border of the municipality (near Thamesford and Putnam). The distance from Putnam to Victoria Hospital is about 28 kms, whereas the distance from Putnam to Alexandra Hospital is about 9 kms.



Given a number of influencing factors (such as medical call volume, ambulance off-load delay, and location of ambulances), paramedic response times are often impacted, leading to greater reliance of Thames Centre Fire Department and the associated “tiered response” agreements.

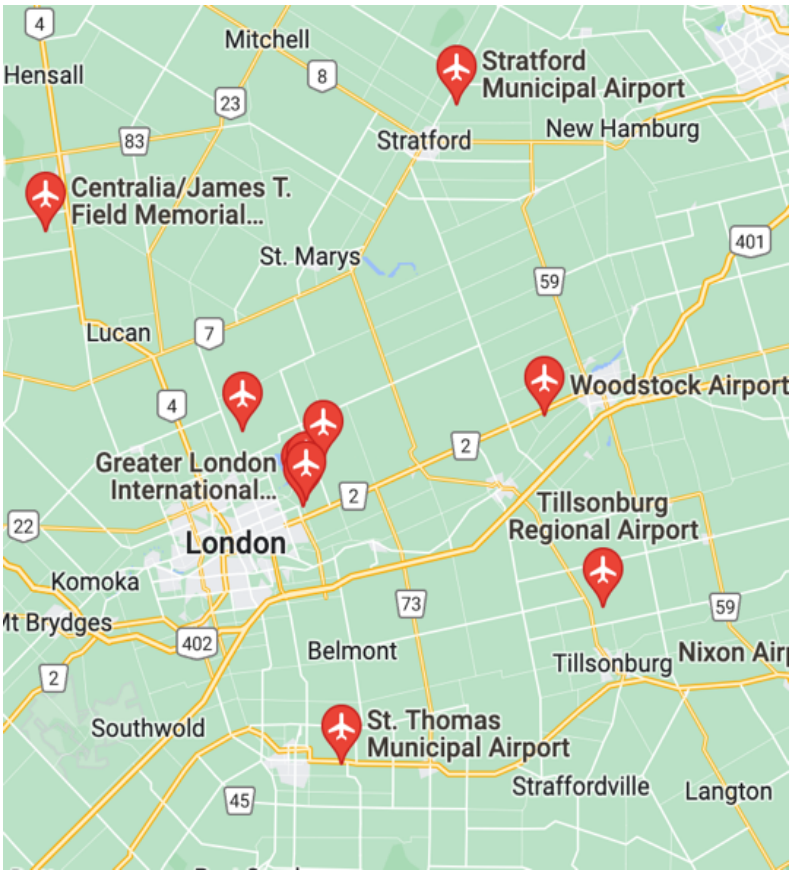
Given the geography of the municipality, and associated response times of the paramedic service, consideration should be given to locate an EMS facility in Thorndale.

Airports

The primary airport located near Thames Centre is the London International Airport, as identified in the adjacent map.

Other regional airports are located in Stratford, Woodstock and Tillsonburg. Smaller crop dusting and recreational airports are also located in the vicinity of Thames Centre.

As a result, over the past few years, there have been a few incidents of smaller planes making emergency landings or crashing within the municipal borders of Thames Centre. As a result, the fire department should be prepared to respond to airplane emergencies.



Telecommunications

For the general public located in Dorchester and Thorndale, there are a number of internet service providers, including:

Bell Internet, Bell Wireless, Rogers Internet, Rogers Wireless, Execulink Internet, Xplornet Internet (Tower or Satellite), Galaxy Internet (Satellite), Ebox, and Falcon Internet Services.

There continues to exist connectivity challenges with internet access in rural areas, thereby limiting internet and cell phone coverage.

For governmental services, the County government provides infrastructure and operational support to their local municipalities in regard to internet services.

Municipal Infrastructure

In 2021, Thames Centre approved their Asset Management Plan, which is subsequently reviewed and assessed annually during budget deliberations. The Asset Management Plan (AMP) is organized into the following categories and sources of funding:

Infrastructure Category	Funding Source
Local Roads	Municipal Levy
Bridges and Culverts	
Buildings and Facilities	
Fleet	
Machinery and Equipment	
Parks and Land	
Water Distribution	Utility Rates
Wastewater Collection	
Stormwater Collection	

As per the AMP, the overall replacement cost of the asset categories included in this AMP totals $323.3 million. 75% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 35% of assets. For the remaining 65% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities.

According to the overall AMP assessment completed in 2021, to meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-

term sustainability, the Municipality's average annual capital requirement totals $8.4 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $4.2 million towards capital projects per year. As a result, there is currently an annual funding gap of $4.3 million.

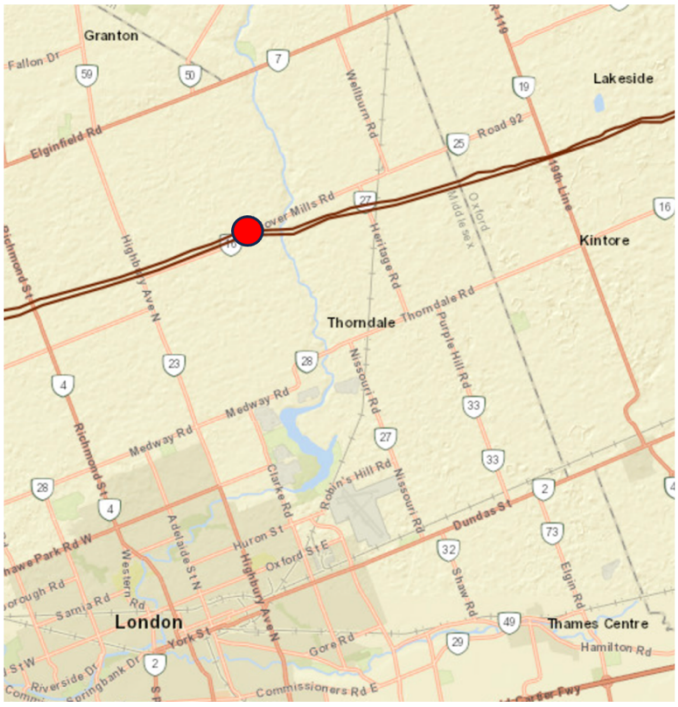
Several recommendations were developed to guide the continuous refinement of the Municipality's AMP. These include:

- asset inventory data review and validation;
- the formalization of condition assessment strategies;
- the implementation of risk-based decision-making as part of asset management planning and budgeting;
- the continuous review, development and implementation of optimal lifecycle management strategies; and
- the identification of proposed levels of service

The continued evaluation (of the above recommendations) and further development of a data-driven, best-practice approach to asset management is overall recommended to ensure the Municipality is providing optimal value through its management of infrastructure and delivery of services.

Pipelines

Thames Centre hosts a portion of the federally regulated pipeline operated by Enbridge Pipeline Inc.



Of the federally regulated pipelines located in Ontario, and as per the Canada Energy Regulator, there have been 1,601 pipeline incidents in Canada since data has been collected. The types of incidents are identified in the following chart:

Specific to Thames Centre, there was one reported incident, where on February 5, 2012 a fire event occurred along the Enbridge pipeline near Thorndale (see red dot indicator on the map above). According to the incident report (INC2012-023) the fire was caused by "corrosion and cracking, defect and deterioration" due to a lack of maintenance.

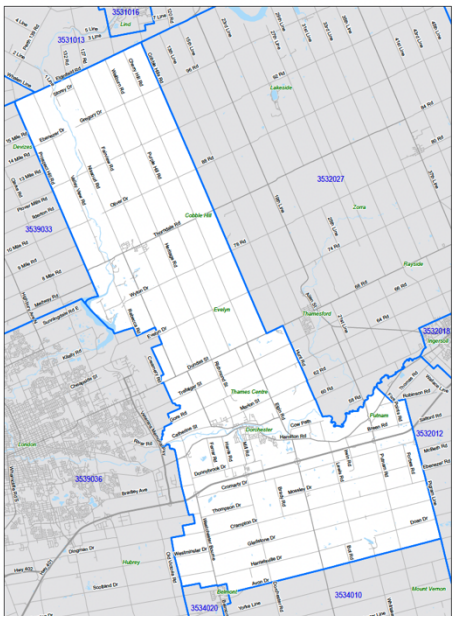
As a result, Thames Centre Fire Department should be aware of possible pipeline emergencies and forge partnerships with the pipeline company in coordinated emergency responses.

Types of Incidents in Canada as per the Canada Energy Regulator:

Incident	Number
Release of Substance - Gas	606
Operating Beyond Design Limits	382
Fire	326
Release of Substance- Liquid	82
Serious Injury	79
Miscellaneous Release	62
Adverse Environmental Effects	33
Explosion	24
Fatality	7
Total	1,601

Demographic Profile

2021 Canada Census



According to the 2021 Canada Census, the population of Thames Centre was 13,980, representing a 6% increase for the 2016 census. The population density is 32.2 per square kilometer, and primarily located in the urban centres of Dorchester and Thorndale.

Age and Gender Characteristics:

AGE	MALE	FEMALE	TOTAL
0 to 14 years	1,225	1,180	2,405
15 to 64 years	4,485	4,415	8,900
65 + years	1,345	1,330	2,675
Total	7,055	6,925	13,980

The average of the population is 42.7 years of age (42.3 for Males and 43.0 for Females).

Culture

In the 2021 Census of Population, “Immigrants” includes those who were admitted to Canada on or prior to May 11, 2021.

From this data set, 91.3% of people living in Thames Centre do not categorize themselves as immigrants. For the remaining 8.7% (or 1,180 people), the majority (89%) arrived in Canada prior to 2000, with the remaining (11%) arrived after 2000. From those who immigrated to Canada, and currently reside in Thames Centre, their places of birth was primarily from Europe (United Kingdom – 27.0%, Netherlands – 14.3%, Germany – 5.9% and Poland – 5.1%); Americas (United States – 6.3%); and Asia (India – 4.6% and China – 2.1%).

From an ancestry perspective, the majority living in Thames Centre identify themselves as English, Scottish, Irish, Canadian, German and Dutch.

Level of Education:

From a population age group between 25 to 64 years of age (7,210), 90% have a high school diploma or equivalent certificate. From those who have a high school diploma, 68.2% continued their education to earn a college diploma or a university degree.

Employment

Of those who identified as having employment, the top three occupations are in manufacturing, health care & social services, and construction. This is followed by agriculture and education sectors. A summary of the occupations are listed below as sources from the 2021 Canada Census:

Occupation	Number
Agriculture, forestry, fishing and hunting	575
Mining, quarrying, and oil and gas extraction	15
Utilities	60
Construction	775
Manufacturing	990
Wholesale trade	425
Retail Trade	720
Transportation and warehousing	375
Information and cultural industries	115
Finance and insurance	355
Real estate and rental and leasing	105
Professional, scientific and technical services	475
Management of companies and enterprises	0
Administrative and support, waste management and remediation services	230
Educational services	535
Health care and social assistance	815
Arts, entertainment and recreation	80
Accommodation and food services	315
Other services (except public administration)	320
Public administration	290
Total	7,580

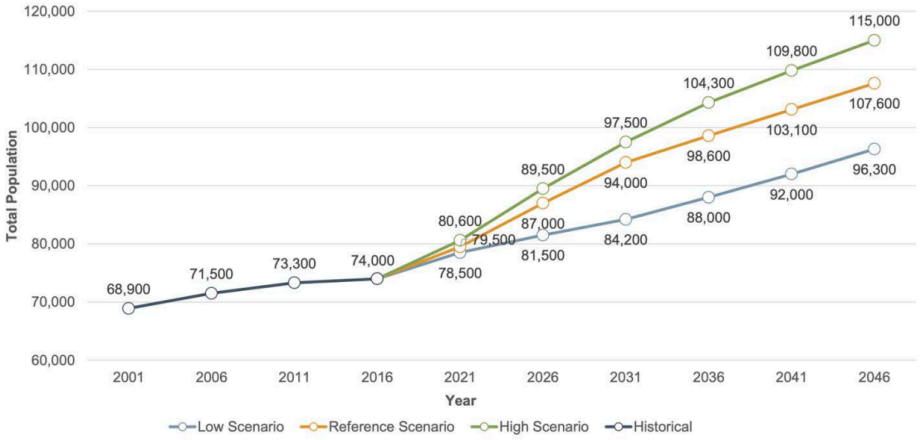
Of those working, 970 commute to work within Thames Centre; 2,385 commute within Middlesex-London area outside Thames Centre, and 1,035 commute to work outside the Middlesex-London area.

Middlesex County

The County of Middlesex recently completed their Official Plan, which received provincial approval on July 7, 2023. Within the County's Official Plan, they projected a 30-year population growth (2016 to 2046) of 96,300 people (low scenario) to 115,000 people (high scenario).

This represents a 30.1% population increase (low scenario) to 55.4% increase (high scenario). The impact of this projected population increase (either low to high estimates) is an increase in demand for housing and municipal services.

Figure 2
Middlesex County
Population Forecast Scenarios, 2016 to 2046



The following charts, are the estimated housing starts that will be required to meet the population growth:

Figure A-5
Middlesex County
Population and Housing Growth, 2016 to 2046
Low Scenario

	Year	Population		Housing Units					Persons Per Unit (P.P.U.) with undercount	Persons Per Unit (P.P.U.) without undercount
		Including Census undercount[1]	Excluding Census undercount	Singles & Semi-Detached	Multiple Dwellings[2]	Apartments[3]	Other[4]	Total Households		
Historical	*Mid-2001*	68,900	66,600	20,960	510	1,480	220	23,160	2.98	2.88
	Mid-2006	71,500	69,100	21,810	820	1,530	400	24,550	2.91	2.81
	Mid-2011	73,300	70,800	23,180	650	1,600	420	25,840	2.84	2.74
	Mid-2016	74,000	71,500	24,060	650	1,720	400	26,820	2.76	2.67
Forecast	*Mid-2021*	78,500	75,900	25,750	780	1,840	400	28,770	2.73	2.64
	Mid-2026	81,500	78,800	27,670	940	2,020	400	31,030	2.63	2.54
	Mid-2031	84,200	81,400	29,230	1,130	2,200	400	32,950	2.55	2.47
	Mid-2036	88,000	85,000	30,870	1,380	2,410	400	35,060	2.51	2.43
	Mid-2041	92,000	88,900	32,590	1,710	2,690	400	37,380	2.46	2.38
	Mid-2046	96,300	93,100	34,140	2,060	2,970	400	39,560	2.43	2.35
Incremental	**Mid-2001 to Mid-2006**	2,600	2,500	850	310	50	180	1,390		
	Mid-2006 to Mid-2011	1,800	1,700	1,370	-170	70	20	1,290		
	Mid-2011 to Mid-2016	700	700	880	0	120	-20	980		
	Mid-2016 to Mid-2021	4,500	4,400	1,690	130	120	0	1,950		
	Mid-2016 to Mid-2026	7,500	7,300	3,610	290	300	0	4,210		
	Mid-2016 to Mid-2031	10,200	9,900	5,170	480	480	0	6,130		
	Mid-2016 to Mid-2036	14,000	13,500	6,810	730	690	0	8,240		
	Mid-2016 to Mid-2041	18,000	17,400	8,530	1,060	970	0	10,560		
	Mid-2016 to Mid-2046	22,300	21,600	10,080	1,410	1,250	0	12,740		

Figure A-7
Middlesex County
Population and Housing Growth, 2016 to 2046
High Scenario

	Year	Population		Housing Units					Persons Per Unit (P.P.U.) with undercount	Persons Per Unit (P.P.U.) without undercount
		Including Census undercount[1]	Excluding Census undercount	Singles & Semi-Detached	Multiple Dwellings[2]	Apartments[3]	Other[4]	Total Households		
Historical	*Mid-2001*	68,900	66,600	20,960	510	1,480	220	23,160	2.98	2.88
	Mid-2006	71,500	69,100	21,810	820	1,530	400	24,550	2.91	2.81
	Mid-2011	73,300	70,800	23,180	650	1,600	420	25,840	2.84	2.74
	Mid-2016	74,000	71,500	24,060	650	1,720	400	26,820	2.76	2.67
Forecast	*Mid-2021*	80,600	77,800	26,370	830	1,890	400	29,480	2.73	2.64
	Mid-2026	89,500	86,500	30,300	1,150	2,260	400	34,110	2.62	2.54
	Mid-2031	97,500	94,200	33,650	1,560	2,630	400	38,240	2.55	2.46
	Mid-2036	104,300	100,800	36,310	1,970	2,970	400	41,660	2.50	2.42
	Mid-2041	109,800	106,100	38,580	2,400	3,340	400	44,720	2.46	2.37
	Mid-2046	115,000	111,100	40,450	2,820	3,680	400	47,360	2.43	2.35
Incremental	**Mid-2001 to Mid-2006**	2,600	2,500	850	310	50	180	1,390		
	Mid-2006 to Mid-2011	1,800	1,700	1,370	-170	70	20	1,290		
	Mid-2011 to Mid-2016	700	700	880	0	120	-20	980		
	Mid-2016 to Mid-2021	6,600	6,300	2,310	180	170	0	2,660		
	Mid-2016 to Mid-2026	15,500	15,000	6,240	500	540	0	7,290		
	Mid-2016 to Mid-2031	23,500	22,700	9,590	910	910	0	11,420		
	Mid-2016 to Mid-2036	30,300	29,300	12,250	1,320	1,250	0	14,840		
	Mid-2016 to Mid-2041	35,800	34,600	14,520	1,750	1,620	0	17,900		
	Mid-2016 - Mid-2046	41,000	39,600	16,390	2,170	1,960	0	20,540		

Middlesex County has also prepared a Community Safety and Well-Being Plan (June 2021) with a legislative purpose to build on the current levels of programs and services that support community safety and well-being, learnings from COVID-19, leverages existing planning tables and committees, and identifies overall community priorities for the next five years.

In this plan, it was identified that:

- housing security is a priority for the Community Safety and Well-Being Plan, giving it an average rating of 6.63 out of 10
- there is a lack of affordable housing
- housing affordability is a top problem for renters, with almost 35% of renters with shelter costs totaling 30% or more of their income
- 12.0% of home owners also have unaffordable housing
- 168 households were on the 2019 social housing waitlist
- 1,648 people were living with homelessness in 2019

The Community Safety and Well-Being Plan identifies goals and objectives to address these issues.

Overall, community factors such as increased population, housing, demands for services, and social issues will generate greater demands on the Thames Centre Fire and Emergency Services Department.

Hazard Profile

In compliance with the *Emergency Management & Civil Protection Act*, Thames Centre has adopted Bylaw Number 96-2015 on November 23, 2015, which establishes the municipality's Emergency Response Plan. The Emergency Plan was last revised in 2017.

According to the Thames Centre's Emergency Response Plan, and in specific, Section 25 of the Plan, the following hazards were identified in the community:

- Winter storms (snowstorms, blizzards, ice/sleet storms);
- Windstorms and tornados;
- Lightning storms and hail storms;
- Hazardous materials (fixed sites);
- Water Emergency;
- Critical Infrastructure Failure (such as power outage);
- Hazardous materials and transportation incidents;
- Transportation accidents (road, rail, air);
- Petroleum and gas pipeline emergencies;
- Human health emergencies and epidemics;
- Agriculture and food emergencies; and
- Floods

It should be noted that municipal officials have concluded that there are a few industrial sites in the Municipality that are considered to present Special Hazards (categorized as nuclear facilities, large manufacturing or industrial plants, and/or fuel storage tanks).

As per the municipality's Emergency Response Plan, preparations to respond to the potential emergencies involving the noted hazards, require that the Emergency Control Group and the Emergency Operations Centre (EOC) have available essential data. The following information should be readily available at the EOC:

- Maps identifying the following:
  - Transportation routes,
  - Pipeline data,
  - Municipal drains, and
  - Municipal wells;
- Information sheets on long-term care homes; and
- A Resource Directory of goods and services that might be required during an emergency.

The Emergency Response Plan identifies the locations of the primary and alternate Emergency Operations Centre (EOC) when the Emergency Control Group (ECG) has been assembled. The ECG, when alerted, will report to the primary Emergency Operations Centre located at the

Municipal Office (4305 Hamilton Road, Dorchester). If this primary location is not available, the location of the EOC may be changed to the alternate location is identified as the Thorndale Public Library (21790 Fairview Road, Thorndale).

Based on interviews with fire personnel, the Thorndale Fire Station has also been designated a secondary EOC. However, neither of these locations have been designed to function as a secondary EOC.

Last revised in 2017, the municipality's Emergency Plan needs to be updated to reflect changes in organizational structure and the adopted Hazard Identification and Risk Assessment (HIRA) dated December 2021. The municipality also needs to equip and design their primary and secondary EOCs to function in the event of a declared emergency.

The Municipality's HIRA provides an opportunity for the municipality to assess the hazard emergency in terms of probability, consequence and priority. It also provides a framework for identifying Community Vulnerability (vulnerable population, critical infrastructure, response capability and environmental impact) and Emergency Management Actions (program standards, mitigation, preparedness, and response recovery. See Appendix #2 for full details.

As per the HIRA, the municipality has identified 14 potential hazards impacting the community, as per the following chart:

No.	Hazard	Examples	Priority	Probability	Consequence
1	Winter Storm	Blizzard, Freezing Rain	1	2	2
2	Wind Storm	Tornado	1	2	2
3	Health Emergency	Epidemic, Pandemic	1	2	2
4	Cyber Attack	Data Ransome	1	4	3
5	Water Emergency	Contamination	1	2	3
6	Hazmat	Transportation	1	4	3
7	Transportation Accident	Road, Air, Rail	1	4	3
8	Pipeline Emergency	Gas, Petroleum	1	1	3
9	Utility Disruption	Hydro, Gas	2	3	2
10	Hazmat	Fixed Site	2	2	2
11	Weather Storm	Lightning, Hail	2	2	1
12	Agricultural Emergency	Food Contamination	3	1	2
13	Floods	River Rising	3	1	2
14	Climate Change	Heat Wave, Cold Weather	3	3	3

Based on the HIRA, the response to an identified hazard emergency is a multiple professional and agency team effort. Specific to the Thames Centre Fire Department response to an emergency hazard incident, there are specific roles of the officers and firefighters that is dependent by the ECG and the public.

Hazard	Thames Centre Fire Department Roles - General Descriptions		
	Prevention	Preparedness	Response
Winter Storms		- ensure fire stations are plowed and salted - ensure adequate fuel supply for station generators and fire vehicles - alert firefighters to ensure adequate response capacity	- respond to emergencies - assist in recovery
Wind Storms (Tornadoes)		- ensure adequate fuel supply for station generators and fire vehicles - alert firefighters to ensure adequate response capacity	- respond to emergencies - assist in recovery
Health Emergency	- ensure all personnel have up to date immunization as recommended by public health	- follow public health guidelines on immunization, PPE, and workplace environment - ensure all personnel have access to recommended PPE	- respond to medical emergencies as per tiered response agreement
Cyber Attacks	- follow County IT guidelines to guard against cyber attacks	- partner with IT to backup data bases - have ability to revert to paper format during cyber attack - ensure fire communications have secondary site and response plan	- follow County IT protocols as directed
Water Emergency		- ensure backup supply of potable drinking water for personnel - keep up to date mutual aid agreements	- follow public health protocols as directed - assist public works department as requested
Hazmat (Fixed Site)	- ensure fire prevention program includes requirement for companies to demonstrate proper hazmat control procedures, protocols and emergency response plans	- ensure all firefighters are trained in hazmat awareness - ensure SOPs involving hazmat response are up to date - ensure staff are trained in incident command - practice hazmat response	- respond to emergencies within firefighter capacity - assist in evacuations as required
Hazmat (Transportation)		- ensure all firefighters are trained in hazmat awareness	- respond to emergencies within firefighter capacity - assist in evacuations as required

		- ensure SOPs involving hazmat response are up to date - ensure staff are trained in incident command - practice hazmat response	
Transportation Accident (highway, air, rail)		- ensure all firefighters are trained in safety when on highways, railways, and at aircraft incidents - ensure SOPs involving highways, rail ways and aircraft crash sites are up to date - ensure staff are trained in incident command - ensure PPE are donned as per incident	- respond to emergencies within firefighter capacity, in coordination with OPP on highways, and, rail companies of railway tracks -
Pipeline Emergency		- ensure all firefighters are trained in pipeline awareness - ensure SOPs involving pipeline response are up to date - ensure staff are trained in incident command - in partnership with pipeline company, practice response	- respond to emergencies within firefighter capacity, in coordination with pipeline company - assist in evacuations as required
Critical Infrastructure Failure (Power Outage)		- ensure adequate fuel supply for station generators and fire vehicles - alert firefighters to ensure adequate response capacity - ensure fire communications have secondary site and response plan	- respond to emergencies - assist with shelters as required
Weather Storm (Hail, Lightning)		- ensure adequate fuel supply for station generators and fire vehicles	- respond to emergencies
Agricultural Emergency			- assist in distribution of food and water if supply is contaminated or impacted
Floods		- monitor flood warnings from conservation authorities and local weather networks - ensure all firefighters are trained in safety when on responding to water emergencies	- respond to emergencies

		- ensure SOPs involving water safety, rescue, and floods are up to date - maintain specialized equipment for water emergencies	
Climate Change (Heat Days, Cold Days)		- ensure all firefighters are aware of heat exhaustion and cold exposures - ensure SOPs involving heat and cold emergencies are up to date - partner with public health	- respond to emergencies - assist in heat/cold shelters as requested

Public Safety Response Profile

Public emergency response services operating in the Municipality of Thames Centre includes:

- Thames Centre Fire Department
  - Stations in Dorchester and Thorndale
  - Dispatched by the Strathroy-Caradoc Police Department
- Middlesex-London Emergency Medical Services
  - Station in Dorchester
  - Dispatched by London Central Ambulance Communication Centre
- Ontario Provincial Police
  - Highway 401 and Exeter Road (London)
  - Dispatched by the OPP Communications Centre (Orillia).

Thames Centre Fire and Emergency Services Department

The Thames Centre Fire and Emergency Services Department is established via Municipal Bylaw 15-2015 and is authorized to provide the following services:

- Fire Suppression / Search and Rescue
- Fire Prevention
- Fire Safety Education
- Training of Persons involved in the provision of Fire Protection, Rescue and Emergency Services
- Rescue and Emergency Services and the delivery of those services
- based on the expertise and training of fire personnel
- Medical First Response according to Agreement with Ontario Ministry of Health
- Water Entry Ice/ Water Rescue
- Water Entry Still Water Rescue
- Water Entry Swift Water Rescue
- Personal Injury / Auto Extrication at Motor Vehicle Crashes

There are two primary stations in Dorchester and Thorndale.

Personnel	Officers	Firefighters
Thames Centre	2	
Dorchester	9	24
Thorndale	9	10

*As of January 22, 2024

Fleet	Pumper/Tanker	Pumper	Tanker	Rescue	Rescue/Brush	Water/Vacuum
Dorchester	1	1	1	1	1	
Thorndale		1	2	1		1

Given the mixed urban and rural characteristics of the municipality, the fire service has a fleet to service areas where property is predominately not connected to the municipal water system. In addition, due to the capacity of the existing water distribution system, the fire service has the capacity to respond to urban areas where water pressure may be deficient to combatting structure fires.

The fire department also assists with Middlesex-London EMS in responding to emergency medical calls. In a formal "tiered response" agreement, the fire department will respond to specific medical emergencies based upon criteria identified in the agreement (such vital signs absent calls).

Further, the fire department receives (and provides) "mutual aid" assistance with neighbouring municipalities. When requested, the fire department may request other neighbouring fire departments to assist in responding to a local emergency, and in turn, respond to a neighbouring municipality when asked for assistance.

Finally, the fire departments also enters into "automatic aid" agreements, where the closest fire station will automatically respond to an emergency based on geography and response times, regardless which municipal boundary exists.

NFPA Standard 1720 applies to volunteer fire departments as in the case of Thames Centre. The standard recommends the minimum number of staff, response time performance, and recommended objectives:

Demand Zone[aaa]	Demographics	Minimum Staff[b]	Response Time[c]	Meets Objective
Urban area	>1000 people/mi²	15	9	90%
Suburban area	500–1000 people/mi²	10	10	80%
Rural area	<500 people/mi²	6	14	80%
Remote area	Travel distance ≥ 8 m	4	Directly dependent on travel distance	90%
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90%

Further, fire services is supported by Public Works, where staff and equipment are readily available to assist. This includes operations involving snow plows, backhoe, loaders, graders and tractors.

Middlesex-London Paramedic Services

As per the *Ambulance Act*, the County of Middlesex is the designated delivery agent of land ambulance services within the municipal boundaries of the County and the City of London. In

turn, the County implemented, in partnership with the City of London, the Middlesex-London EMS to provide land ambulance services.

As per Ontario Regulation 257/00, the County of Middlesex is required to report a Performance Plan for the next calendar year respecting response times. The Performance Plan is based on patient types:

Sudden Cardiac Arrest (SCA)
CTAS I- severely ill, requires resuscitation
CTAS II- requires emergent care and rapid medical intervention
CTAS III- requires urgent care
CTAS IV- requires less-urgent care
CTAS V- requires non-urgent care

The 2022 Middlesex- London EMS performance plan for Thames Centre was

Patient Type	Plan in Minutes	Plan in Percentage	Performance in Percentage
CTAS 1	8	70%	72.5%
CTAS 2	10	75%	78.0%
CTAS 3	15	80%	89.9%
CTAS 4	20	90%	95.9%
CTAS 5	20	90%	95.9%
SCA	6	60%	65.9%

The same performance plan was initiated in 2023.

Ontario Provincial Police

The Municipality of Thames Centre has entered into an agreement with the Ontario Provincial Police, for the provision of police services as per Section 5.1 of the *Police Services Act*.

Although police services have no defined response time standards, they do operate as per O. Reg. 3/99 entitled “Adequacy and Effectiveness of Police Services”.

Community Services Profile

There are several governmental services and non-governmental organizations that are focused to support the municipality to mitigate risks. There are:

Emergency Management Ontario

Within existing legislation, each municipality must develop and implement an emergency management program to protect the lives and property of its citizens. All levels of local government (both single-tier and two-tier) must complete the mandatory annual program required by the *Emergency Management and Civil Protection Act*.

Emergency Management Ontario (EMO) coordinates emergency management programs in the province and ensures the implementation in all municipalities and provincial ministries. A municipality or ministry may reach out to EMO for advice on their program at any time.

In emergencies where the local capacity is overwhelmed by the emergency, it may be advised that the municipality declare an emergency to receive more support and resources from EMO.

During large-scale emergencies, the premier and cabinet may declare a provincial emergency and make special emergency orders to protect public safety, such as the case during the recent Covid-19 pandemic.

Emergency Control Group

The Emergency Control Group (ECG) consists of the following representatives:

From Council:	Mayor and Deputy Mayor;
From Staff:	CAO, Clerk, Fire Chief, Director of Financial Services, Emergency Information Officer, Director of Transportation, Director of Environmental Services:
From County:	Director of Community Services & Facilities, Manager of IT, County CEMC; Medical Officer of Health (or designate);
From Allied Services:	Middlesex-London EMS, Middlesex OPP

Overall, the ECG is responsible for coordinating and directing services to address a local community emergency.

The ECG can also invite other agencies to the group, depending on the emergency, such as utility companies, legal services, ARES, train companies, etc.

There is no clear distinction in roles and responsibilities between the County CEMS and the Municipal CEMC when the Emergency Control Group is assembled. This should be clarified in the published Emergency Plan.

Further, there is no clear identification of the Primary and Secondary Emergency Operations Centre and whether these facilities are equipped to support the ECG

Middlesex-London Public Health

The Emergency Response Plan of the Middlesex-London Health Unit provides for a planned and organized response will turn to an emergency. It provides the resources and information needed by the Medical Officer of Health and the staff of the Health Unit to evaluate human and environmental impacts of an event.

Having a formal Plan encourages an integrated approach to disasters, and fosters prompt, efficient and coordinated response operations by the different elements of the emergency organization.

County of Middlesex Community Services

In support of the local municipality, during an emergency, a county representative of social services will:

- Open reception centres in collaboration with the County CEMC;
- Ensure the well-being of residents who have been displaced from their homes by arranging emergency lodging, clothing, food services, registration and inquiry services and personal services;
- Liaison with the County CEMC regarding the engagement of CERV (Community Emergency Response Volunteers) team as required;
- Contact and provide direction to volunteer groups able to assist in welfare functions, when so directed by the ECG (such as receiving the assistance of the Salvation Army);
- Supervise the opening and operation of temporary and/or long-term reception centres and ensuring they are adequately staffed;
- Ensuring liaison with the OPP with respect to the designation of evacuation centres which can be opened on short notice;
- Supervise the opening and operation of the set-up of evacuation centres which can be opened on short notice;

- Ensuring liaison with the Medical Officer of Health or designate on areas of mutual concern regarding operations in reception centres; and
- Ensure that a representative of the Board of Education and/or Separate School Boards are notified Canadian Red Cross.

Amateur Radio Emergency Service (ARES)

The ARES Volunteers report to the Community Emergency Management Coordinator and may be requested to:

- Activate the emergency notification system of the local amateur radio operators group;
- Provide emergency radio contact in the event of complete telephone failure;
- Maintaining an inventory of community and private sector communications equipment and facilities within the community, which could, in an emergency, be used to augment existing communications systems; and
- Make arrangements to acquire additional communications resources during an emergency, if required.

Canadian Red Cross

London-Middlesex & Elgin County Regional Office Emergency and Disaster Services.

The Canadian Red Cross can provide emergency and disaster services in partnership with first responders, emergency managers, public officials, and in collaboration with other voluntary sector organizations. These services may include emergency lodging, reception and information, emergency food, emergency clothing, personal services and family reunification.

The current agreement for this partnership is between the County of Middlesex and the Canadian Red Cross.

Salvation Army

The Salvation Army's Emergency Disaster Services (EDS) is an international network involving thousands of trained personnel worldwide, including many volunteers. Salvation Army EDS personnel respond to incidents of various sizes and scopes. In following with its holistic ministry, the Army provides supports that meet the immediate, as well as long-term, physical, emotional and spiritual needs of disaster survivors and responders.

Economic Profile

Annual Operating Budget

The 2023 was $11,490,017 of which $1,143,564 (10%) has been allocated to the Department of Fire and Emergency Services. This equated to $670,717 (5%) to Dorchester operations and $472,847 (4%) to Thorndale operations. In 2024, the municipality has implemented a consolidated fire budget to realize cost efficiencies in support services, supplies and equipment.

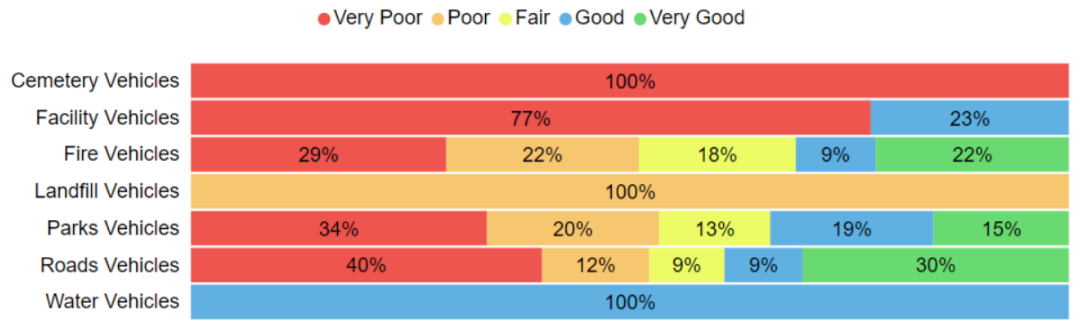
In 2024, the total operating budget was approved at $11,650,516, of which $1,347,249 (11.6%) is allocated to the fire department. Overall, there has been increases to the fire department's operational budget.

Year	All Operations	% Increase	Fire Operations	% Increase	% Budget allocated to Fire
2022	11,108,453		1,098,762		
2023	11,490,017	3.43	1,143,564	0.041	10.00
2024	11,650,516	1.40	1,347,249	1.78	11.56

Capital Budget

There are 10 vehicles allocated to the Department of Fire and Emergency Services. As per the municipality's Asset Management Plan, the cost to replace the fire service fleet was $4,062,115 (2021 estimate).

The condition of the fleet has been rated as per the following chart:



In regards to the levy, the municipality has a capital budget plan for fire service's fleet replacement as identified in the chart below. As additional revenue sources, the municipality has the ability to access to development charges, levy increases, and debt allocation, as additional revenue resources.

Budget ($)	2021	2022	2023	2024	2025	2026	2027
Dorchester	93,728	102,233	107,167	117,884	129,672	142,639	156,903
Thorndale	52,071	55,700	59,687	66,933	72,288	78,071	84,316
Total	145,799	157,933	166,854	184,817	201,960	220,710	241,219

For 2024, the municipality has approved a fire department capital budget, which includes $204,000 to purchase PPE and equipment:

Fire Services	
boots, helmets 11	$62,000
PPE Coveralls (used in auto-extrication) - 35 sets	$14,000
Ground monitor, water nozzle, Thorndale	$15,000
Paratech Stabilization Kit, Auto Extrication needs, Dorchester	$35,000
Battery powered positive smoke displacement ventilation fan	$8,000
Thermal Imaging Cameras X5	$30,000
WATER/ICE RESCUE PPE (both stations)	$20,000
Hydraulic power unit for auto extrication, Dorchester	$20,000
Fire Services Total	**$204,000**

In regards to the fire fleet, the capital budget contains $80,000 to purchase a new Fire Chief's vehicle to function as a command unit, and, $190,000 towards replacing Rescue Unit #200 assigned to the Thorndale fire station.

Reserves

The Municipality has various special reserve accounts to fund a variety of capital projects:

RESERVE AND RESERVE FUND CONTINUITY - PROJECTIONS

Reserves*	Information Technology Capital	Fire Services Capital	Transportation Capital	Fleet Capital	Cemetery Capital	Community Services Capital	Drain Capital	Storm Water Capital	Waste Management Capital	Water Capital	Waste Water Capital	Catherine Street	Seniors Centre	Tax Stabilization
Projected Balance 12/31/2023	$ (72,445)	$ (1,354,218)	$ (3,594,186)	$ (658,618)	$ (201,395)	$ 1,474,934	$ (92,958)	$ 154,273	$ (482,046)	$ (3,346,579)	$ (1,095,095)	$ (106,990)	$ (85,605)	$ (1,842,071)
Multi Year Capital														
2024	$ 118,780	$ 204,000	$ 3,668,518	$ 1,090,000	$ -	$ 327,100		$ 200,000	$ 389,550	$ 1,306,371	$ 1,306,371		$ 85,605	
Operating Utilizations														
2024								$ 953						$ 245,573
Capital Contributions to Reserve (initiated in 2024)														
2024	$ (57,879)	$ (257,239)	$ (1,735,535)		$ (6,431)	$ 542,338								
Operating Contributions to Reserve														
2024								$ (85,731)		$ (1,112,466)	$ (853,962)			$ (245,573)
Projected Balance 12/31/2024	$ (11,544)	$ (1,407,457)	$ (1,661,203)	$ 431,382	$ (207,826)	$ 2,344,372	$ (92,958)	$ 269,495	$ (92,496)	$ (3,152,674)	$ (642,686)	$ (106,990)	$ -	$ (1,842,071)
						OVERDRAWN		OVERDRAWN						
*DRAFT FOR INTERNAL DISCUSSION PURPOSES														

Specific to the fire department, the pre-2024 reserve account was $1,354,218. The 2024 budget has a $204,000 draw for PPE and equipment, and a contribution of $257,239, resulting in a projected pre-2025 balance of $1,407,457.

The fleet reserve account had a pre-2024 balance of $658,618. With a capital budget draw of $1,090,000, the pre-2025 balance will result in a $431,382 deficit.

Debt Limit

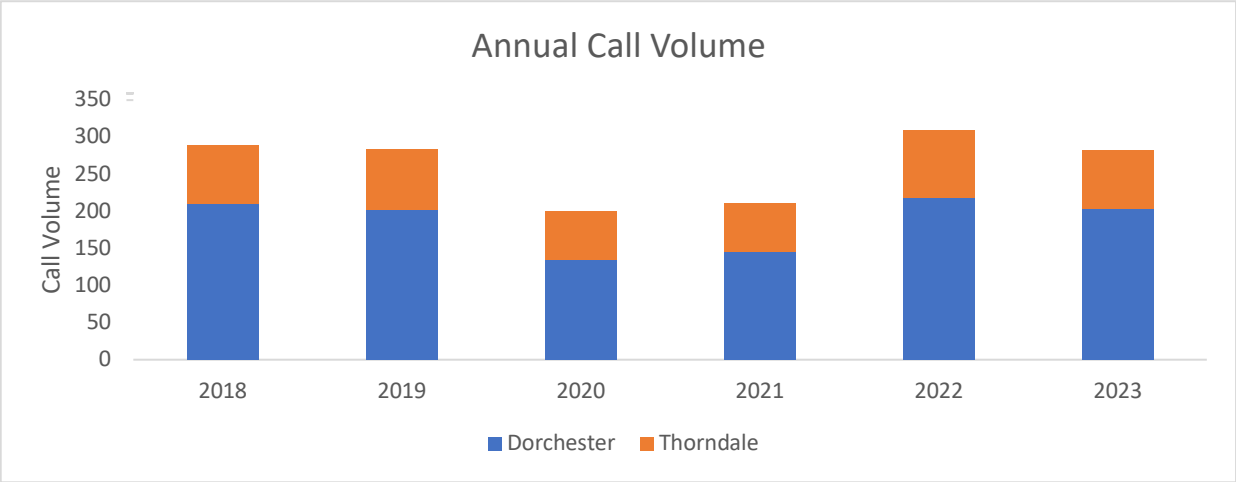
The Municipality's 2022 Financial Information Return (FIR) submitted to the provincial government shows current debt charges of $1,445,789 (= $1,199,096 principle and $246,693 interest).

The municipality's debt limit is 25% on net revenues ($29,090,669) = $5,229,547. This results in $3,783,758 in remaining debt load capacity for any additional long-term burrowing required ($5,229,547- $1,199,098). Should an emergency occur, the municipality has capacity to take on additional debt.

Past Loss and Event History Profile

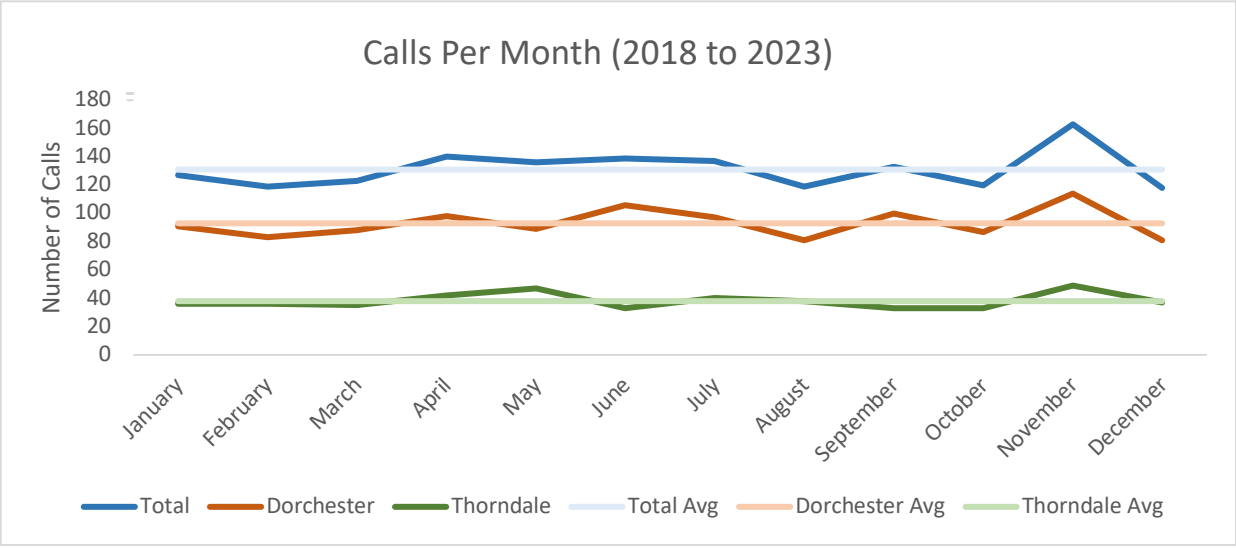
Data Analysis

An analysis was conducted on call data for a 6-year period (2018 to 2023). As evident in the chart below, there is approximately 300 calls per year for fire services, with the exception of the global pandemic years (2020 to 2021).



Of the total call volume, approximately 70% is assigned to the Dorchester Fire Station, versus 30% assigned to the Thorndale Fire Station.

In the 6-year aggregate (2018 to 2023), emergency calls for fire services are relatively consistent per month:

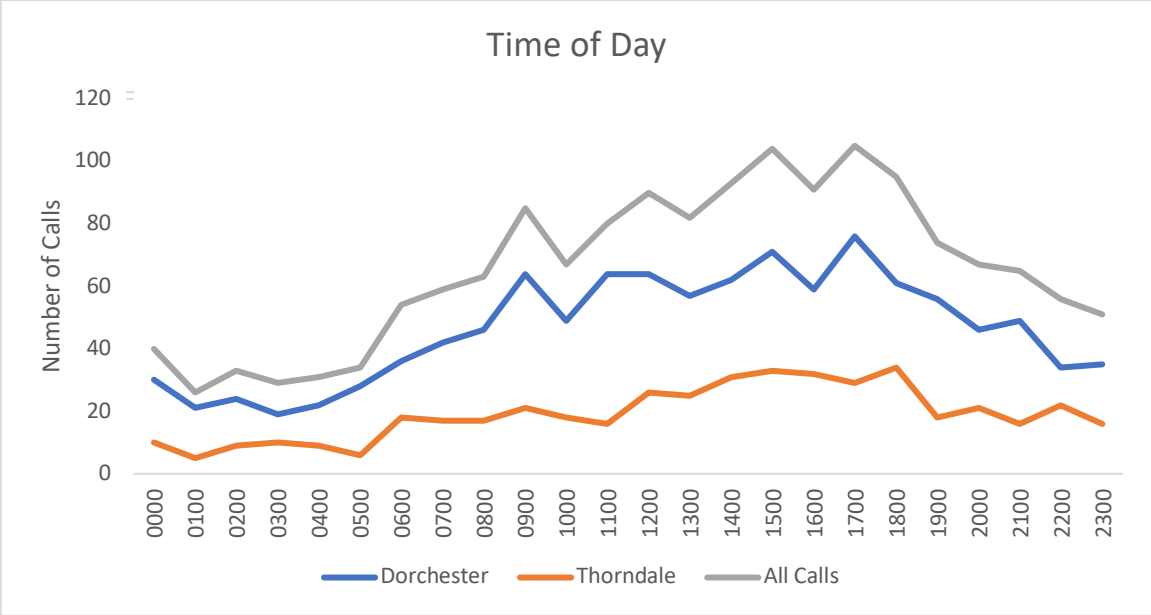


On average, there is approximately 131 fire service calls per month in Thames Centre, with about 93 calls per month assigned to Dorchester Fire Station and 38 calls per month assigned to Thorndale Station.

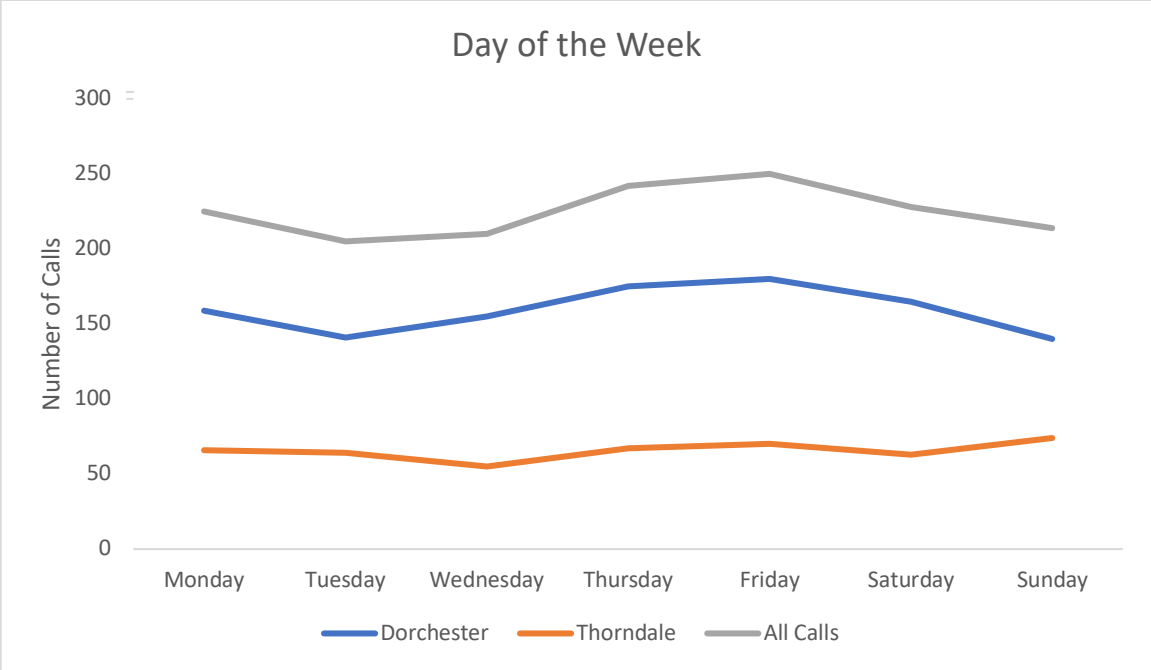
Over the 6-year timeframe (2018 to 2023), the type of calls received by Thames Centre Fire Department was primarily motor vehicle collisions and fire related calls. This was followed by medical calls and carbon monoxide alarms.

Category	Description	Dorchester	Thorndale	Total
Vehicles	Motor Vehicle Collisions (MVC)	236	133	369
	MVC with Extrication Required	27	3	30
			Sub-Total	399
Fire	Structure	92	45	137
	Outdoor – No Permit	51	26	77
	Outdoor – With Permit	15	4	19
	Mechanical Overheat	28	0	28
	Pre-Fire Conditions	13	11	24
	Gas Leaks	8	7	15
	Mutual Aid	5	12	17
	Automatic Aid	0	1	1
			Sub-Total	318
Medical	Emergency	79	24	103
	CPR or VSA	44	21	65
	No Assistance Provided	17	5	22
			Sub-Total	190
(CO) Carbon Monoxide	Malfunction or No CO Detected	77	23	100
	CO Present	13	10	23
			Sub-Total	123
Other Emergency	Public Hazard Conditions	26	4	30
	Power Lines Down	10	17	27
	Assistance to Other Agency	18	31	49
			Sub-Total	106
Cancelled	On Scene – Incident Not Found	45	10	55
	On Scene – Other Agency Cancel	17	0	17
	On Scene – No Rescue Required	4	0	4
	Cancelled En Route	223	15	238
Fire Alarm	Accidental or Human Error	30	32	62
	Equipment Malfunction	37	25	62
			Sub-Total	438
			Total Calls	1574

Further analysis of the 6-year data was conducted to identify what time of day emergency calls were being received by Thames Centre Fire Department. The data illustrates that Thames Centre Fire Department between 0900 to 1900 hours, with peak call volume between 1500 to 1700 hours.

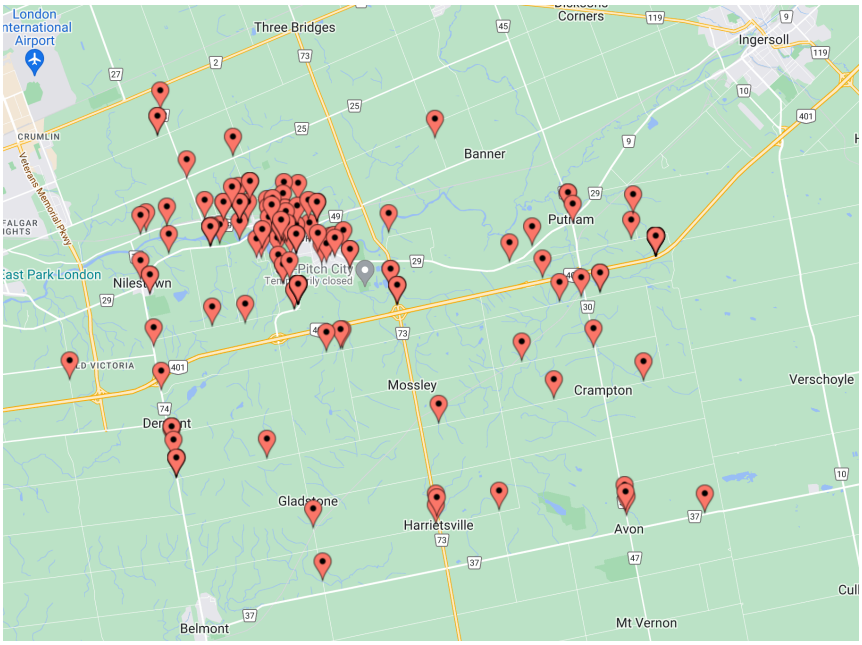


The data also shows that Thursdays and Fridays are typically the busiest days in receiving emergency calls at the Dorchester Fire Station.



Emergency Call Distribution

Sample- 2023 (January to December) Call Distribution – Dorchester Fire Station



* Excludes Hwy 401 Calls

Sample- 2023 (January to December) Call Distribution – Thorndale Fire Station

Performance

The performance of a municipal fire department is vital to the health and safety to community members. Performance is also a key factor in assessing property protection, such as safeguarding residential, commercial, agricultural and industrial structures.

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

The FUS provides a grading system that sets insurance rates. The grading system is based on:

1. Risk Assessment - Municipal building stock details such as size, construction, exposures, occupancy, and fire protection systems, lay the foundation of a municipal risk assessment and determine the community's fire hall, apparatus and staffing needs (See CRA Recommendation #5 in Fire Master Plan);
2. Water Supply - Within a water system assessment for public fire protection, the major emphasis is placed upon the ability to deliver adequate water to control major fires throughout the municipality on a reliable basis. What is ultimately available to the fire department is the critical test in the evaluation (See Recommendation #7in Fire Master Plan);
3. Fire Safety Control - The fire safety control assessment includes a review of all fire prevention activities including public education. The overall needs of these programs should be determined with the aim of reducing the number of fires within the community. All activities should be measured for their effectiveness (See Recommendations in Master Fire Plan); and
4. Fire Department- Areas reviewed in the Fire Department assessment include apparatus, distribution of companies, staffing, training, maintenance, pre-incident planning, etc. (See Recommendations in Master Fire Plan).

Given the value of such structures, the majority of owners purchase property insurance, which is primarily based on the FUS grading system.

Fire insurance grading & recognition is important. To help establish appropriate fire insurance rates for residential and commercial properties, insurance companies need reliable, up-to-date information about a community's fire-protection services. Fire Underwriters Survey provides that information through the Public Fire Protection Classification (PFPC) and Dwelling Protection Grades (DPG) insurance grading systems.

When a community improves its PFPC or DPG, insurance rates may be reduced, and underwriting capacities may increase. Every insurance company has its own formula for

calculating their underwriting capacities and insurance rates, however the PFPC and DPG classifications are extremely useful to insurers in determining the level of insurable risk present within a community.

As referenced earlier, NFPA Standard 1720 applies to volunteer fire departments, which identifies the minimum number of staff, response time performance, and recommended objectives when responding to a structure fire:

Demand Zone[aaa]	Demographics	Minimum Staff[b]	Response Time[c]	Meets Objective
Urban area	>1000 people/mi²	15	9	90%
Suburban area	500–1000 people/mi²	10	10	80%
Rural area	<500 people/mi²	6	14	80%
Remote area	Travel distance ≥ 8 m	4	Directly dependent on travel distance	90%
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90%

Loss Value

The current database and/or data entry does not efficiently capture injuries or property value losses.

Appendix 1 – Thames Centre HIRA

Hazardous Information Risk Assessment (HIRA) – December 2021							
Risk Assessment				Community Vulnerability			
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
1	Winter Storms (snowstorms, blizzards, ice and freezing rainstorms)	P – 2 C – 2	1	Dorchester Terrance, Nissouri Manor, Schools, Urban Population	- Access to food/water - Power outages - Transportation Problems - Communications (phone) - Public safety - Continuity of government services, if prolonged	- Fire - OPP - EMS - Public Works -Hydro &Phone company -Mutual aid/snow removal equipment. -Middlesex-London Health Unit	- Damage to trees, etc. - Flooding in spring
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Listen for the warnings from Environment Canada. - Weather Watch - Weather warning - Public awareness/downed power lines - Shelter areas - Creation of mutual aid assistance agreement		
			Preparedness		- Public Works training, up-to-date equipment - Mutual aid agreements - Purchasing agreements - Identify supply - Risk specific response plan - Thames Centre has backup generators - Most farm operations now have generators		
			Response Recovery		- Municipal resources, Safe Drinking water distribution. - Emergency Response Plan, support from next level of Government		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
2	Windstorm Tornadoes	P – 2 C – 2	1	Dorchester Terrace; Nissouri Manor; Schools; Trailer parks	- Power outages - Transportation (trees, debris on roads) -Communication (phone) -Public safety	- Fire - Public Works - Hydro/phone company - OPP - County Roads Dept. - EMS - Middlesex-London Health Unit	- Crop and tree damage - Potentials for spills/ pollution - Road accidents - High winds
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Listen for the warnings from Environment Canada. - Weather Watch - Weather warning - Public awareness/downed power lines - Municipal tree trimming program - Storm proof buildings		
			Preparedness		- Public Works - Removal services - Mutual aid - Emergency Response Plan		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
3	Lightning Storms / Hail Storm	P – 2 C – 1	3	Dorchester Terrace; Nissouri Manor;	- Power outages - Communication - Public safety - Transportation	-Public Works -Hydro/phone company -Fire Dept.	- Tree damage - Crop damage

				Schools; Agricultural workers; Recreational activities		-OPP -EMS -MTO -County Roads Dept.	
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Weather watch and warnings - Public awareness program: at home, office, or outside		
			Preparedness		- Fire response plan - OPP road safety - EMS response plan		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
4	Critical Infrastructure Failure (Power Outage)	P – 3 C – 2	2	Dorchester Terrace; Nissouri Manor; Schools	- Electricity - Continuity of government services	- Fire - Public Works - Hydro/phone company - OPP - EMS - Middlesex-London Health Unit - Volunteer organizations	Water contamination of unregulated wells
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Expansion of the water supply grid - Public awareness program - Safe drinking water awareness program - Fuel contingency plan - Fuel storage		
			Preparedness		- Public Works training, up-to-date equipment - Mutual aid agreements - Purchasing agreements - Identify supply - Risk specific response plan - Thames Centre has backup generators - Most farm operations now have generators		
			Response Recovery		- Municipal resources, Safe Drinking water distribution. - Emergency Response Plan, support from next level of Government		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
5	Human Health Emergencies & Epidemics and Global Pandemics	P – 2 C – 2	1	General Public	Continuity of government services.	- Fire Dept. - OPP - EMS - Public Works - Middlesex-London Health Unit	Threat to Livestock (Poultry) and general public
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Public education & awareness - Immunization program		
			Preparedness		- Training personal		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
6	Cyber Crime / Attack	P – 4 C – 3	1	- Residents - General Public	- Server, IT equipment, continuity of government services	- County IT - Insurance	- Possible compromise of personal information and data, - SCADA data breach with possible water contamination or

							environmental damage. - possible environmental damage within facilities
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan		
			Mitigation Prevention		- Password management - Multi-Factor Authentication - Training - Cyber insurance - Continue implementing cyber security controls to mitigate risk		
			Preparedness		- Backup data - Insurance - Education & training		
			Response Recovery		- Disaster Recovery Plan - Have appropriate municipal resources & equipment to respond - ITS Incident Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
7	Water Emergency	P – 2 C- 3	1	Dorchester Terrace; Nissouri Manor; Schools; Urban Population	- Water treatment plant - Water distribution system	- Fire - Public Works - Middlesex-London Health Unit - Ministry of the Environment - Volunteer organizations	Water contamination
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Expansion of the water supply grid - Public awareness program - Safe drinking water awareness program - Fuel contingency plan - Fuel storage		
			Preparedness		- Public Works training, up-to-date equipment - Mutual aid agreements - Purchasing agreements - Identify supply - Risk specific response plan -Thames Centre has backup generators - Most farm operations now have generators		
			Response Recovery		- Municipal resources, Safe Drinking water distribution. - Emergency Response Plan, support from next level of government		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
8	Hazardous Material (Fixed Site)	P – 2 C – 2	2	Immediate surrounding downwind areas.	- Water/treatment is part of the infrastructure, so issues relating to this could be present	- Public Works - Hydro/phone company - Fire Dept. - OPP - EMS - MTO - CANUTEC - Ministry of the Environment - Middlesex-London Health Unit	- Air contamination - Water/vegetation contamination. - Chemical fires
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan		
			Mitigation Prevention		- Guidelines – safe handling practices - System audits - Agreement/contract, clean up companies - Specific training - Up-to-date equipment		
			Preparedness		- Exercises/plan - Training personal		

					- Emergency Response Plan - In place agreements for clean-up, decontaminate, disposal		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
9	Hazardous Material (Transportation or Freight)	P – 4 C – 3	1	- Downwind Areas - Urban areas	- Transportation - Water	- Fire Dept. - Emergency Services (EMS, Police, etc.) - Mutual aid - Public Works - CANUTEC - Volunteers - Middlesex-London Health Unit - Ministry of the Environment	Possible water contamination
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public awareness Plan		
			Mitigation Prevention		- Traffic control - Public awareness - Regulations - Designation of dangerous goods transportation routes		
			Preparedness		- Emergency Response Plan - Public Works - Reception centres - Volunteers		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
10	Transportation Accident (Road, Rail, Air, Passenger)	P – 4 C – 3	1	- Residents - Persons on hwy./rail	Transportation	- Fire Dept. - Emergency Services (EMS, Police, etc.) - Public Work - County Roads Dept. - MTO - Volunteers - Middlesex-London Health Unit	Possible environment damage
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public Awareness Plan		
			Mitigation Prevention		- Traffic control - Designation of dangerous goods transportation routes		
			Preparedness		- Emergency Response Plan - Public Works - Reception centres - Volunteers		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
11	Agriculture & Food Emergencies	P – 1 C – 2	3	- Farmers - General Public	- Public safety - Food supply	- Emergency Services (EMS, Fire, OPP) - Middlesex-London Health Unit - Ministry of Agriculture & Food - Ministry of the Environment	Possible disposal of dead livestock
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public Awareness Plan		
			Mitigation Prevention		- Public education & awareness		

					- Guidelines (safe handling practices)		
			Preparedness		- Emergency Response Plan		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan		
No.	Hazard	Risk Analysis	Priority	Vulnerable Population	Critical Infrastructure	Response Capability	Environment
12	Floods	P – 1 C – 2	3	- General public in flood plain areas; - Golf Courses	- Transportation - Water - Sewage systems	- Emergency Services (EMS, Fire, OPP) - Conservation authorities - Public works - County Roads Dept. - MTO -Middlesex-London Health Unit	- Potentials for spills - Erosion - Sedimentation - Contamination
Emergency Management (EM) Actions			Program Standards		4-6 Response Capability 4-3 Emergency Response Plan 4-10 Public Awareness Plan		
			Mitigation Prevention		- Public awareness & education - Flood bulletins from conservation authorities - Flood plain regulation - Designated municipal flood coordinator - Building Codes - Dam safety programs		
			Preparedness		- Community flood plan - Emergency transportation routes - Mutual aid agreements		
			Response Recovery		Have appropriate municipal resources, personnel & equipment to respond in accordance to the Community Emergency Response Plan