

Middlesex Centre

TRANSPORTATION MASTER PLAN

Phase 1: Needs and Opportunities



Table of Contents

1.	Introduction	1
1.1	Report Purpose and Outline	1
1.2	Transportation System Overview	2
2.	TMP Development Overview	4
2.1	Study Process	4
2.2	Municipal Class Environmental Assessment Master Plan Process	5
2.3	TMP Planning Horizons	7
2.4	Phase 1 Engagement Overview	7
3.	Geographic and Socio-Economic Context	9
3.1	Physical Geography	9
3.2	County Context	10
3.3	Other Adjacent Municipalities	13
3.4	Indigenous Nations	13
3.5	Population	14
3.6	Economy	22
4.	Planning and Policy Context	30
4.1	Provincial Policies and Initiatives	30
4.2	Middlesex County Policies and Initiatives	33
4.3	Municipality of Middlesex Centre Policies and Initiatives	36
4.4	Plans of Other Local Municipalities in Middlesex County	44
4.5	Policies and Initiatives of the City of London	45
4.6	Policies and Initiatives of Adjacent First Nations	48
4.7	Climate Change Considerations	48
5.	TMP Vision and Goals	50
5.1	Transportation Vision	50
5.2	Transportation Goals	51

PHASE 1: NEEDS AND OPPORTUNITIES

6.	Travel Patterns and Trends	54
6.1	Commuting Flows	54
6.2	Trips by Time of Day	56
6.3	Travel Mode Shares	57
6.4	Other Trends Affecting Transportation	58
7.	Middlesex Centre Roads and Vehicular Travel	61
7.1	Road Network Jurisdiction	62
7.2	Road Infrastructure Characteristics	66
7.3	Traffic Volumes and Road Capacity Analysis	70
7.4	Road Classifications	77
7.5	Planned Road Improvements	82
7.6	Traffic Collision Analysis	85
7.7	Needs	88
7.8	Opportunities	90
8.	Freight Rail	93
8.1	Rail Lines and Infrastructure	93
8.2	Needs	95
8.3	Opportunities	96
9.	Passenger Transit Services	96
9.1	Current Transit Services	96
9.2	Planned Passenger Transit Services	99
9.3	Needs	101
9.4	Opportunities	101
10.	Cycling Network	102
10.1	Cycling Flows	102
10.2	Planned Cycling Networks	104
10.3	Needs	107
10.4	Opportunities	108
11.	Walking and Wheeling	109
11.1	Trails Network	109

PHASE 1: NEEDS AND OPPORTUNITIES

11.2	Needs	113
11.3	Opportunities	114
12.	Air	115
13.	Summary and Next Steps	116
13.1	Summary of Phase 1	116
13.2	Next Steps	117
Appendix A: Policy and Planning Review Detail		118
Policy and Planning Review Detail		119
Provincial Policies and Plans		119
Middlesex County Policies and Plans		120
Middlesex Centre Policies and Plans		123
Appendix B: Review of Top Collision Locations		127
Review of Top Collision Locations		128

If you require this document in a different format, please contact the Municipality of Middlesex Centre at 519-666-0190 or customerservice@middlesexcentre.ca

1. Introduction

“**Transportation**” includes the movement of people and goods by all travel modes: car and truck, rail, public transit, cycling, walking and more.

Desirably located in the centre of southwestern Ontario and immediately adjacent to the City of London, Municipality of Middlesex Centre (“the Municipality” or “Middlesex Centre”) has grown from 17,262 residents in 2016 to 18,928 residents in 2021 – 9.7% growth in just 5 years! In line with the County and the Municipality’s Official Plans, it is anticipated that Middlesex Centre population will grow to 35,600 residents and employment to 11,700 jobs by 2046.

Transportation connects the Municipality’s 11 urban settlements, community settlements and hamlets spread over 588 square kilometres across a largely rural landscape. Transportation connectivity is vital to making Middlesex Centre an accessible and vibrant place to live, work and visit, to enjoy its rural charm and access its urban amenities.

Developed to guide transportation decision-making, the Municipality’s first stand-alone **Transportation Master Plan (TMP)** is a long-range planning strategy to guide transportation policies, services and infrastructure initiatives for the Municipality’s transportation system through 2046.

1.1 Report Purpose and Outline

The TMP development takes place over a three-phase study process. This report documents the first of these phases, that of identifying transportation needs and opportunities in Middlesex Centre. This report collectively represents the “problem statement” component of the Municipal Class Environmental Assessment Master Planning process (Section 2.2).

Following this introductory chapter, which also includes a transportation system overview, this report is structured as follows:

- Section 2 provides a **TMP development overview**, summarizing the study process and phases, alignment with municipal class environmental assessment process, and engagement activities;
- Section 3 describes key **geographic and socio-economic context**;

PHASE 1: NEEDS AND OPPORTUNITIES

- Section 4 describes the **planning and policy context** for the Municipality and area;
- Following from the above policy review, Section 5 provides a **transportation Vision and Goals** to guide the TMP development process;
- Section 6 describes **travel patterns and trends** in the Municipality;
- Drawing on findings of both technical analysis and engagement activities, Sections 7 through 12 outline **transportation needs and opportunities by mode**, including roads and vehicular travel, rail, passenger transit, cycling, walking and wheeling, respectively; and
- Section 13 provides a **summary and next steps**.

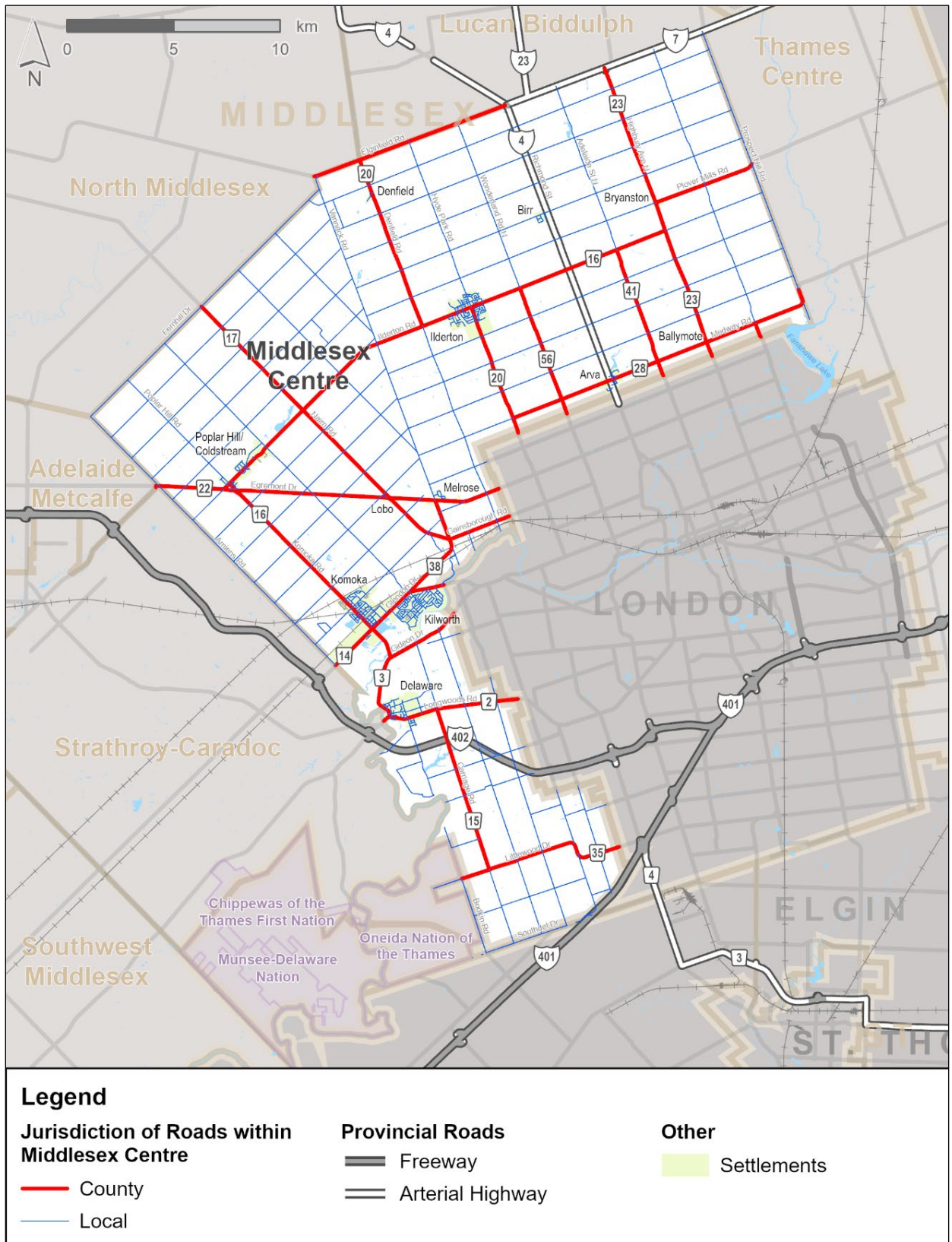
1.2 Transportation System Overview

The transportation system in Middlesex Centre includes a network of roads, highways, railways, sidewalks, cycling infrastructure, trails, railways and more that are owned and operated by different levels of government: the Federal government, Province of Ontario, Middlesex County and Municipality of Middlesex Centre. Exhibit 1.1 shows, for example, road jurisdiction/ownership of the road network within and near the Municipality.

The focus of Middlesex Centre TMP is on roads and other transportation infrastructure and services under the Municipality's jurisdiction, with considerations for other transportation system elements (e.g. services and infrastructure under County jurisdiction).

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 1.1: Municipality of Middlesex Centre Road Network Ownership



2. TMP Development Overview

Broadly, the TMP:

- Guides decision-making relating to Middlesex Centre’s transportation system over the next 25 years (to 2046);
- Aligns with and support the Municipality’s Official Plan and other strategic plans and policies;
- Supports the Municipality’s vision for the future transportation system, leading Middlesex Centre toward more safe, accessible and sustainable transportation networks and services;
- Supports local trips and longer-distance connections for all travel modes, supporting community livability and strengthening local economic opportunities; and
- Informs long-range financial planning.

Below, this section describes the following aspects of TMP development:

- The multi-phase study process;
- Alignment with the Municipal Class Environmental Assessment Master Plan process; and
- Engagement activities conducted as part of Phase 1 of the TMP study.

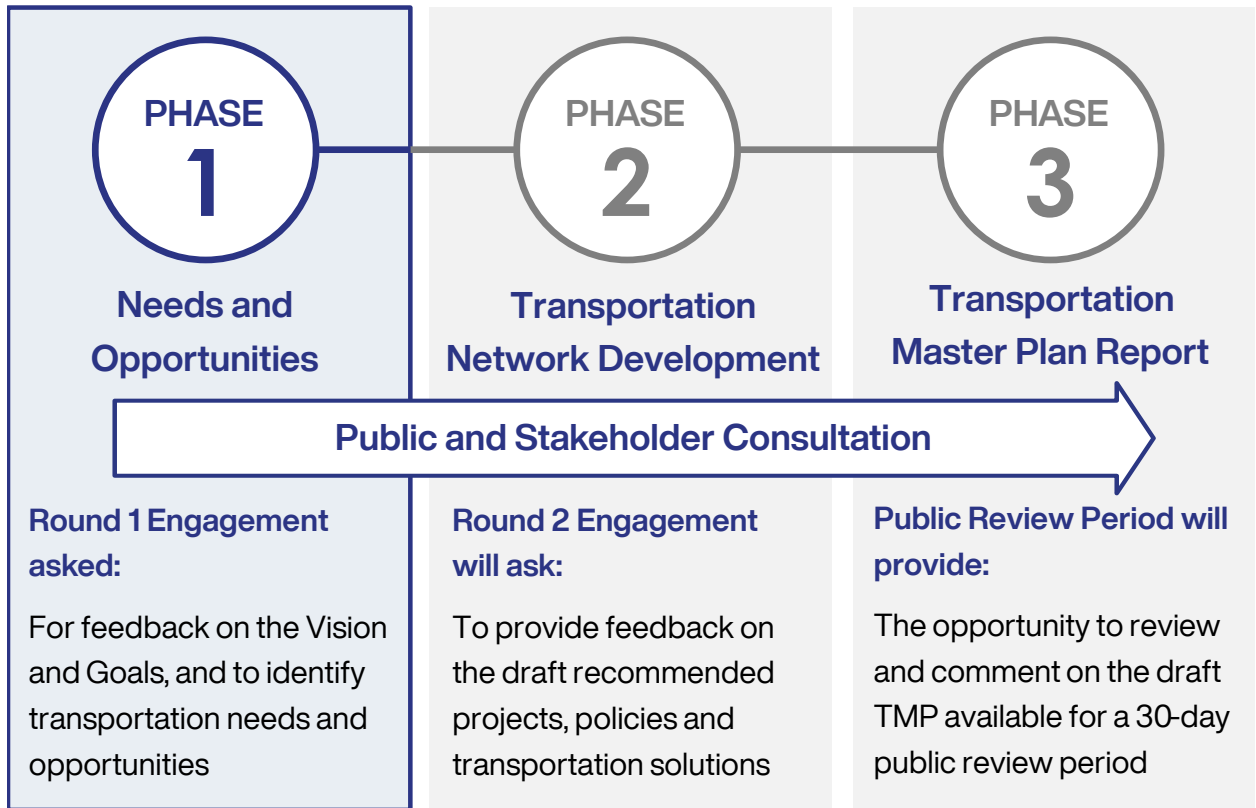
2.1 Study Process

The TMP development study includes three phases, listed below and summarized in Exhibit 2.1:

- **Phase 1 - Identify Needs and Opportunities:** drawing on technical and qualitative analysis and engagement findings toward identifying transportation needs and opportunities;
- **Phase 2 - Transportation Network Development:** the identification and evaluation of potential solutions to address the needs and opportunities; and
- **Phase 3 - Transportation Master Plan Report:** an action plan and summary of the recommended solutions developed throughout the study.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 2.1: Study Process



Each phase has customized communication and engagement activities to allow for feedback from the public and stakeholders.

The TMP study commenced in August 2022 has a completion timing of early 2024.

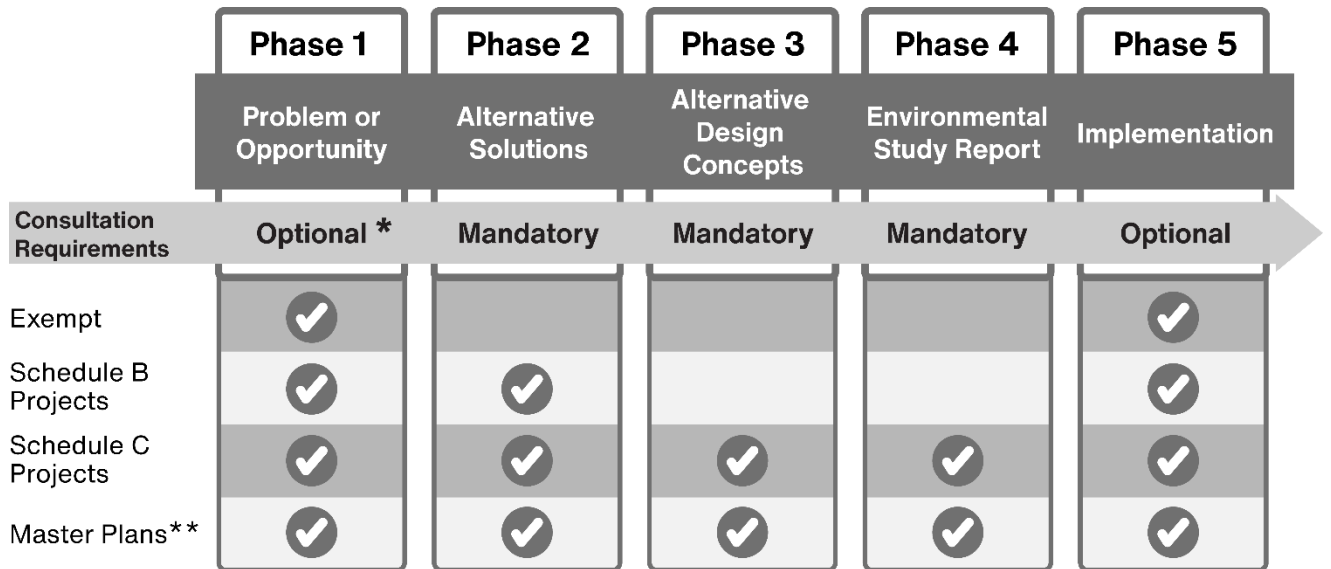
2.2 Municipal Class Environmental Assessment Master Plan Process

The TMP development process adheres to the **Municipal Class Environmental Assessment (MCEA)** planning process for **Master Plans** under the Province of Ontario’s *Environmental Assessment Act, 1990*. The MCEA planning process provides a transparent approach to planning and building municipal infrastructure.

PHASE 1: NEEDS AND OPPORTUNITIES

The MCEA process is summarized in Exhibit 2.2 for different classes of projects¹ and for Master Plans, together with consultation requirements for each phase.

Exhibit 2.2: Municipal Class Environmental Assessment Process



- ✓ Actions required during relevant phase
- * Proponents must use the discretionary consultation point for master plan studies.
- ** Master plans must follow, at a minimum, the same steps of the first two phases of the MCEA process. Proponents can choose to complete Phase 3 and 4 as part of a master plan for recommended Schedule C projects, or to complete these phases as part of a project specific study.

Source: adapted from Municipal Engineers Association *Municipal Class Environmental Assessment* (MCEA, 2023)

A Transportation Master Plan, as described by MCEA guidance, is a long-term plan that integrates existing and future land-use planning and the planning of transportation infrastructure with the principles of environmental assessment planning, building upon the analysis and detailed policies developed through municipal Official Plans.

The TMP study follows the Master Plan Approach 1, which requires the first two phases of the MCEA planning process:

- **Phase 1:** Identify the problem or opportunity (corresponding to the Municipality of Middlesex Centre’s TMP study’s Phase 1); and

¹Transportation projects and activities are categorized into Exempt, Schedule B and C based on the magnitude of their anticipated environmental impact, with EA-Exempt having the lowest anticipated impact and Schedule C having the highest anticipated impact.

PHASE 1: NEEDS AND OPPORTUNITIES

- **Phase 2:** Identify and evaluate alternative solutions to address the problem and establish a preferred solution (corresponding to the Municipality of Middlesex Centre's TMP study's Phases 2 and 3).

The MCEA process requires consultation during Phase 1 for master plan studies (this is discretionary for Phase 1 of other EA studies), as there is tremendous value in confirming the needs and opportunities to be addressed with members of the public as well as key stakeholders. The MCEA process also mandates consultation during Phase 2 of the TMP study.

At the conclusion of MCEA Phase 2 under Approach 1, a TMP document is prepared where the level of investigation, consultation and documentation are sufficient to fulfil the requirements for EA-exempt projects within the plan. The TMP can also be used as support for subsequent Schedule B and C project-specific studies (where additional study will be required for recommended projects with higher impacts before they proceed to design and construction).

2.3 TMP Planning Horizons

A planning horizon is the future point in time a strategic plan looks toward. The Municipality of Middlesex Centre TMP study uses the following planning horizons, using 2021 as a base year:

- **Short-Term – 5 years (by 2026):** Considers immediate priorities for transportation network and strategies in the Municipality of Middlesex Centre;
- **Medium-Term – 10 years (by 2031):** Projects or programs that are forecasted as needed within five to ten years; and
- **Long-Term – 25 years (by 2046):** Longer-term transportation needs, subject to continuous review through the TMP update process.

2.4 Phase 1 Engagement Overview

In parallel with the technical work described in this document, engagement (consultation) activities conducted during Phase 1 of the TMP study were critical to understanding transportation-related issues, needs and opportunities in Middlesex Centre. Phase 1 engagement also afforded input on the study's draft transportation Vision and Goals, ensuring they reflect the values and priorities among stakeholders and residents of Middlesex Centre.

PHASE 1: NEEDS AND OPPORTUNITIES

To allow for a wider audience and broader opportunity for participation, all engagement events for Phase 1 were conducted virtually.

Communications for Phase 1 included the following:

- Launch of a study web page (middlesexcentre.ca/tmp) (December 2022); and
- Joint notice of study commencement and Public Information Centre 1 (PIC 1), posted on the web page and in local newspapers (December 2022), and sent to a range of study stakeholders including Indigenous communities (December 2022 to early January 2023).

Engagement activities/opportunities included the following:

- Public Information Centre (PIC) 1 – this commenced with a live virtual public meeting and information session on the evening of January 11, 2023, in conjunction with the Municipality’s Servicing Master Plan study;
- Public Opinion Survey – this was launched virtually (with paper copies available where preferred) on January 11, 2023, and remained open for input until February 14, 2023; the questionnaire asked about the draft transportation Vision and Goals, as well as eliciting information about needs and opportunities for transportation across different travel modes in Middlesex Centre;
- An interactive online mapping tool was launched on January 11, 2023 to gather location-specific input about roads, walking, cycling, transit and other transportation-related issues, ideas and opportunities in Middlesex Centre. The mapping tool remains open for ongoing input; and
- Technical Advisory Committee (key transportation, planning and other interested representatives from adjacent municipalities and key organizations) – Meeting 1 (February 23, 2022);

The PIC was hosted virtually on the study web page, with the objective of introducing members of the public to the TMP study and involve them throughout the study process. The virtual “display boards” that were used for the PIC 1 presentation remain on describing the TMP and the municipality’s transportation system.

A total of 266 public opinion survey submissions were received. The findings of the survey and of mapping tool inputs to date are discussed in detail in a separate *Public Opinion Survey Summary* TMP report.

PHASE 1: NEEDS AND OPPORTUNITIES

All engagement activities and inputs throughout the TMP study will be documented in a separate *Engagement Summary* report, which will provide additional details regarding the engagement process, objectives, conduct of engagement activities, and a comprehensive summary of findings from stakeholder and public input.

3. Geographic and Socio-Economic Context

This section provides an overview of the following important context relating to Middlesex Centre:

- Physical geography;
- Municipal government (County) context;
- Other adjacent municipalities;
- Indigenous Nations;
- Population; and
- Economy.

3.1 Physical Geography

3.1.1 Natural Features and Attractions

Middlesex Centre covers a large geographic area of approximately 588 square kilometres—an area approximately 40% larger than London but with a population that is just 4% of London's. Middlesex Centre is defined by its pleasant agricultural landscapes and natural heritage features.

Several conservation areas as well as Komoka Provincial Park provide unique local habitats that serve as important recreation areas and tourism generators and help define the character and charm of Middlesex Centre. High-quality public golf courses are also key recreational attractions.

The many rivers and tributaries that run through Middlesex Centre represent five watersheds focused on the following rivers and creeks:

- Upper Thames River;
- Ausable Bayfield;

PHASE 1: NEEDS AND OPPORTUNITIES

- St. Clair Region;
- Lower Thames Valley; and
- Kettle Creek.

The Municipality's natural features include these watercourses as well as their tributaries, and the floodplains, hazard lands (steep slopes or fill) and woodlands adjacent to them. The locations of these features are identified in the Municipality's *Official Plan (2023)*.

While the Municipality's waterways are a rich natural asset, they also represent barriers or challenges to transportation, with the building and maintenance of bridges and culverts needed to accommodate road and active transportation infrastructure to cross them.

Woodlands throughout the Municipality, often located along these rivers and creeks, represent the remains of Carolinian forests. The Carolinian Zone is the most diverse and fragile ecoregion of Canada², and conservation of this rich natural heritage system is an important consideration for transportation infrastructure and other development in Middlesex Centre.

3.1.2 Lake-Effect Weather

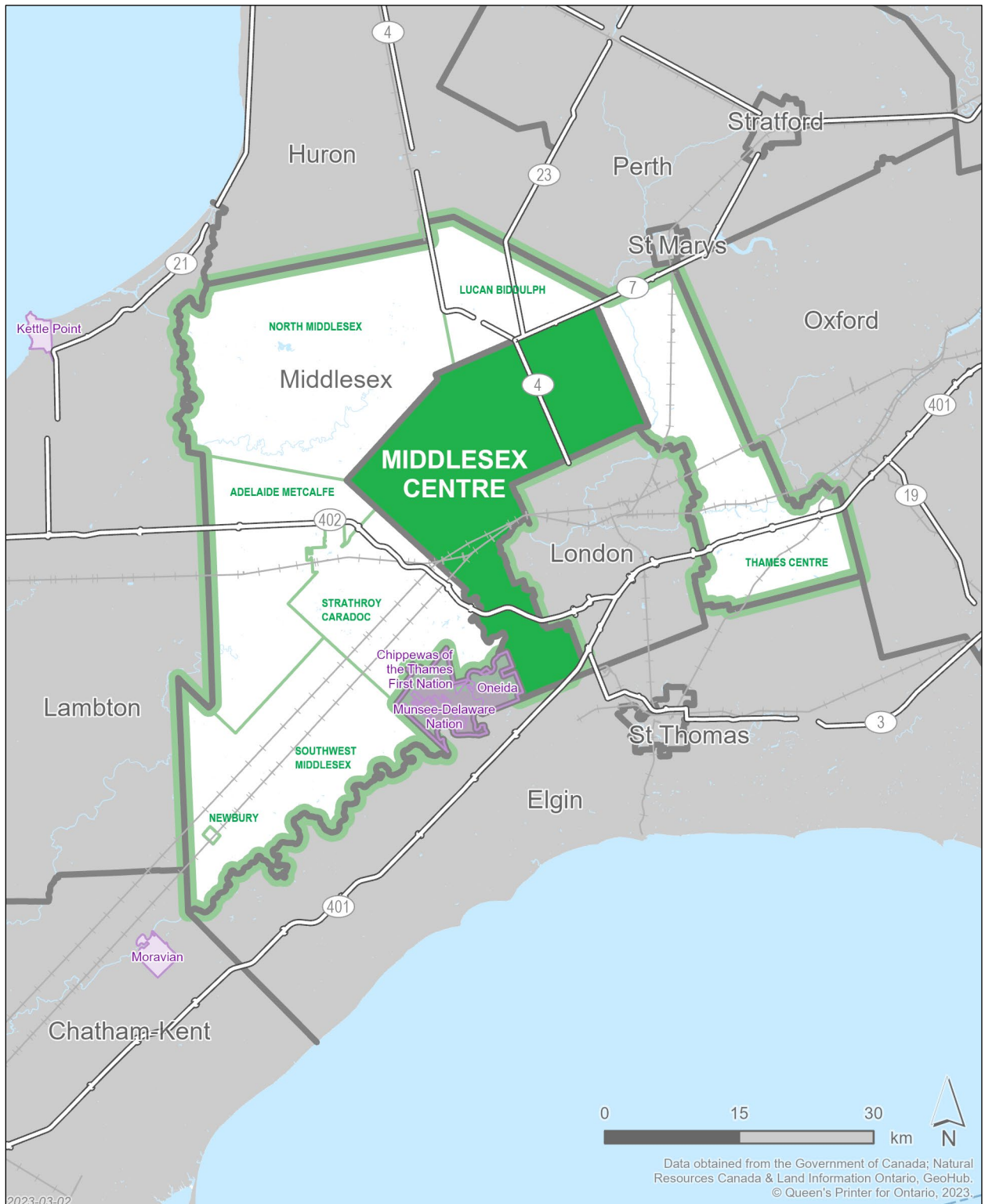
Situated mid-way between Lake Huron and Lake Erie, Middlesex Centre and area experience heavier precipitation in winter as a result of lake-effect snow. While this leads to advantageous spring planting conditions for farming, the heavier snowfall impacts all forms of mobility. The maintenance of travel corridors in the winter, including snow and ice removal along roads, sidewalks and cycling routes, continues to be an important aspect of ensuring the transportation system is safe, comfortable and accommodating for residents and visitors across travel modes.

3.2 County Context

The Municipality of Middlesex Centre is one of eight local municipalities within the **County of Middlesex**. A map of the Municipality of Middlesex Centre in relation to the County of Middlesex is shown in Exhibit 3.1.

² Carolinian Canada. <<https://caroliniancanada.ca/>>

Exhibit 3.1: Middlesex Centre Municipal Context



PHASE 1: NEEDS AND OPPORTUNITIES

Middlesex County's responsibilities as an upper-tier municipality include setting a framework for planning and coordination among its local municipalities, while the local municipalities are responsible for matters that are of interest at the local level. From a transportation perspective, the County is responsible for a network of roads that connect settlement areas within the County and serve a broader connectivity function. This can also include the provision of regional transit connections. Local municipalities are responsible for their own transportation networks that serve primarily a local function.

Five other Middlesex County local municipalities share a border with Middlesex Centre, from east to west:

- Municipality of Thames Centre;
- Township of Lucan Biddulph;
- Municipality of North Middlesex;
- Township of Adelaide-Metcalf; and
- Township of Strathroy-Caradoc.

Exhibit 3.2 summarizes the historic population for Middlesex County and its eight local municipalities from 2006 to 2021. Middlesex County's total population is over 78,000 as of 2021. With a 2021 population of 18,928, Middlesex Centre the second largest of the local municipalities within the County. It is also one of the fastest growing, having grown by more than 21% between 2006 and 2021.

Exhibit 3.2: Historic Population in Middlesex County, 2006 to 2021

Municipality	2006 Population	2011 Population	2016 Population	2021 Population	2006-2021 Growth
Strathroy-Caradoc	19,977	20,978	20,867	23,871	19.5%
Middlesex Centre	15,589	16,487	17,262	18,928	21.4%
Thames Centre	13,085	13,000	13,191	13,980	6.8%
North Middlesex	6,740	6,658	6,352	6,307	-6.4%
Southwest Middlesex	5,890	5,860	5,723	5,893	0.1%
Lucan Biddulph	4,187	4,338	4,700	5,680	35.7%
Adelaide-Metcalf	3,135	3,028	2,990	3,011	-4.0%
Newbury	439	447	466	440	0.2%
Middlesex County	69,042	70,796	71,551	78,110	13.1%

Source: Statistics Canada Census of Population

3.3 Other Adjacent Municipalities

In addition to fellow local municipalities within Middlesex County, Middlesex Centre also borders two external municipalities: the City of London and Elgin County.

Middlesex Centre's position adjacent to the **City of London** is a defining feature of the Municipality's geographic context. Middlesex Centre is located immediately north and west of London, with nearly 50 kilometres of total shared boundary. With a population of over 422,000 and employment approaching 190,000 jobs as of 2021, London is an important regional centre for employment, education, shopping, services and more. London serves as a key employment centre for many residents not only of Middlesex Centre, but also of other nearby municipalities that travel through Middlesex Centre to go to and from London.

Elgin County is an upper-tier municipality directly south of Middlesex Centre, sharing approximately 9 kilometres of municipal boundary with Middlesex Centre, together with Elgin County's local municipality, the Township of Southwold.

While not a border municipality, the **City of St. Thomas**, with a 2021 population of almost 43,000, is also a significant nearby economic centre. Situated approximately 5 kilometres southeast of Middlesex Centre, St. Thomas is located geographically within Elgin County but with an independent municipal government.

Transportation connections between the Middlesex Centre's many communities and with its neighbouring communities, especially with London and St. Thomas as important economic centres, are essential to developing a meaningful TMP that is responsive to the priorities of residents and supports the quality of life in Middlesex Centre.

3.4 Indigenous Nations

The Duty to Consult directs the project team to identify and engage with nearby Indigenous communities that may have an interest in and may wish to help shape transportation plans, policies and projects in Middlesex Centre.

PHASE 1: NEEDS AND OPPORTUNITIES

Three First Nations reserves lie adjacent to or in close proximity to Middlesex Centre, and can be seen on the map shown in Exhibit 3.1:

- **Oneida Nation of the Thames** is comprised of Oneida Nation of the Thames Indian Reserve No. 41, and shares its eastern boundary with Middlesex Centre. It has a total registered on-reserve population of 2,191 as of 2022³.
- **Chippewas of the Thames First Nation**, comprising Chippewas of the Thames First Nation Indian Reserve No. 42, and has a total registered on-reserve population of 1,004 as of 2022³.
- **Munsee-Delaware Nation**, comprising Munsee-Delaware Nation Indian Reserve No. 1 and has a total on-reserve population of 156 as of 2022³.

The Ministry of the Environment, Conservation and Parks has identified additional Indigenous communities that may have an interest in the TMP. In addition to the First Nations listed above, the following Indigenous communities were also contacted to advise of the study and to invite participation in the planning process:

- Aamjiwnaang First Nation;
- Bkejwanong (Walpole Island First Nation);
- Caldwell First Nation;
- Chippewas of Kettle and Stony Point; and
- Eelūnaapèewii Lahkèewiit (Delaware Nation or Moravian of the Thames).

With the exception of Bkejwanong, all aforementioned First Nations are part of the Southern First Nations Secretariat.

Consultation with Indigenous communities is further detailed in the *Engagement Summary* report.

3.5 Population

Middlesex Centre attracts young families, business owners and retirees alike to enjoy a small-town or rural lifestyle. Home to 18,928 people as of 2021, growth in Middlesex Centre has been strong, and this trend is expected to continue.

³ Government of Canada, Crown-Indigenous Relations and Northern Affairs Canada. First Nation Profiles. <https://fnppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=169&lang=eng>

3.5.1 Population Distribution and Settlement Areas

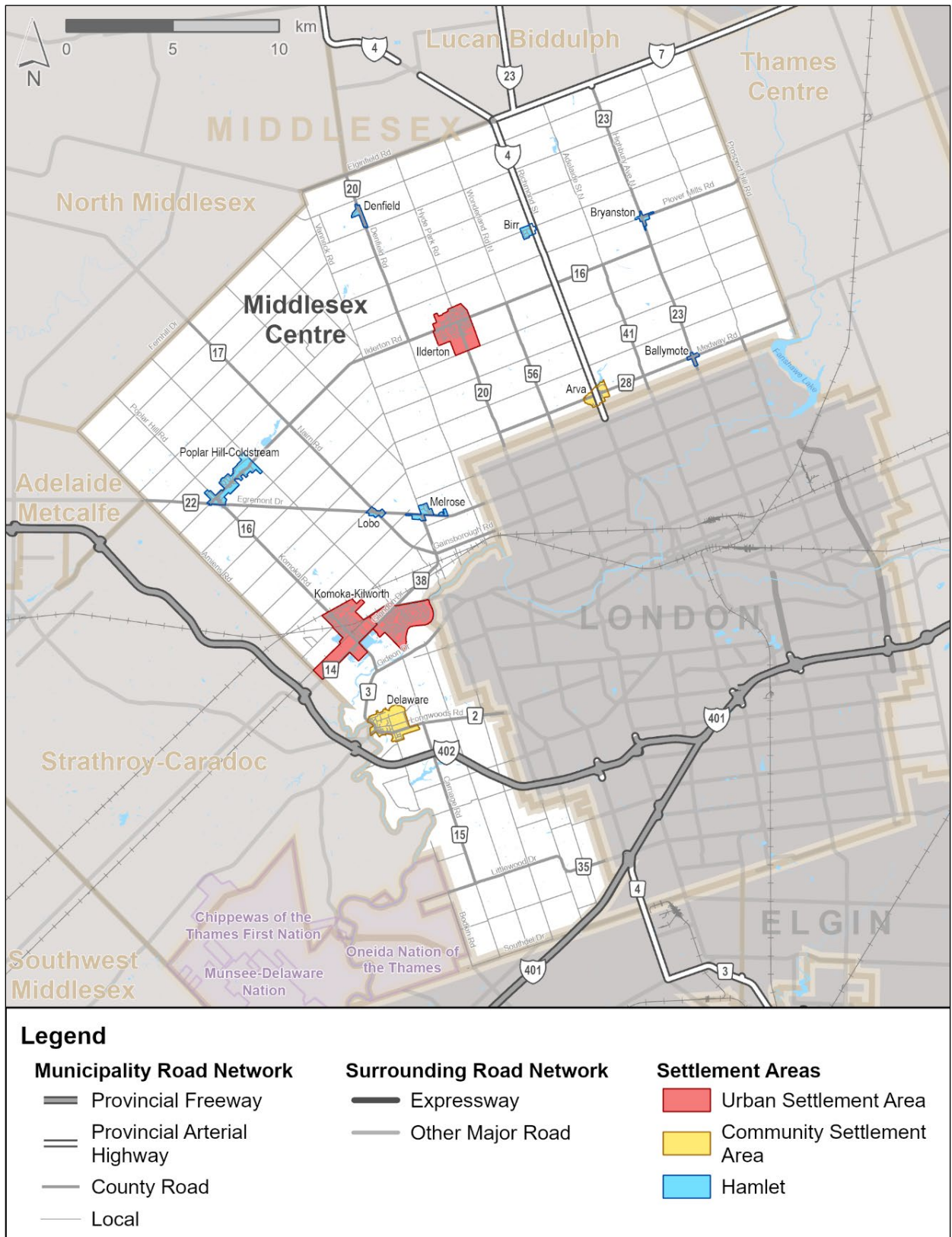
A large majority of Middlesex Centre residents live in the 11 population centres spread across the municipality, particularly in the three largest communities: Ilderton, Komoka-Kilworth and Delaware. Population centres in Middlesex Centre are categorized into a three-level settlement area structure, in conformity with the Growth Management Hierarchy outlined in the *Middlesex County Official Plan*, and shown in Exhibit 3.3:

- **Urban Settlement Areas:** settlements that provide or have the potential to provide full municipal services, are expected to have the highest concentration and intensity of land uses, and will accommodate a significant portion of anticipated growth;
- **Community Settlement Areas:** settlements that serve a community function, but provide a more limited range of land uses and activities than found in Urban Settlement Areas—population growth and the rate of development is expected to be lower than in Urban Settlement Areas; and
- **Hamlet Settlement Areas:** settlements that are expected to accommodate only limited future development, through infilling within the existing Hamlet settlement boundaries.

As much of both current population and population growth is within these settlement areas, providing connectivity within and to/from settlement areas will be an important focus of the TMP, while also addressing rural transportation needs.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 3.3: Middlesex Centre Settlement Areas



3.5.2 Age Distribution

Like much of Canada, the population distribution of Middlesex Centre is getting older. The median age of Middlesex Centre residents in 2021 was 43.6, up from 41.2 in 2006, and higher than the provincial average in 2021 of 41.6.

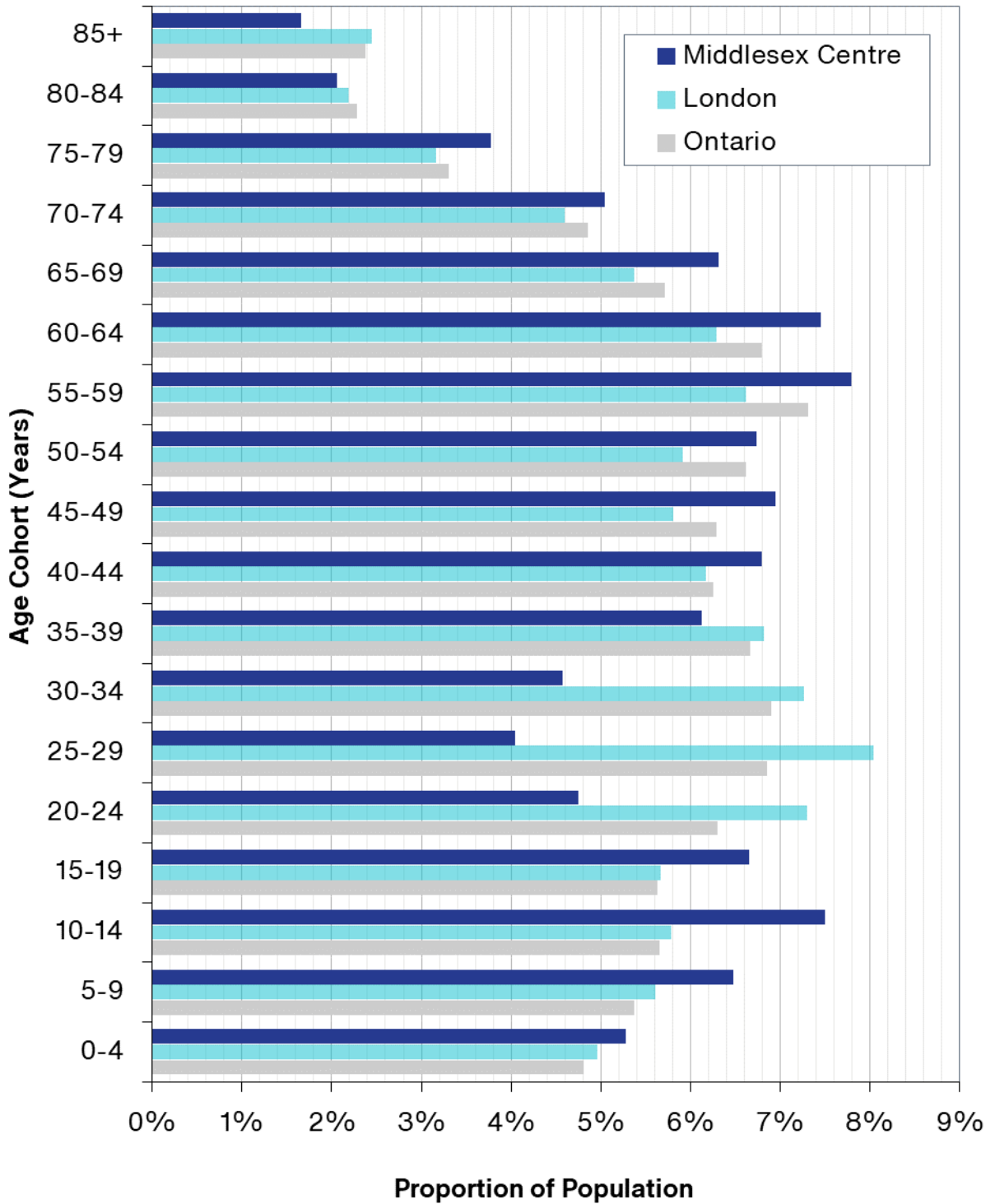
Exhibit 3.4 shows the age distribution of the population in Middlesex Centre in 2021, and compares it to that of the City of London and of the Province of Ontario. The following age characteristics can be seen in Middlesex Centre:

- **Fewer young adults:** Like many rural/small-town communities, Middlesex Centre has a significantly lower proportion of young adults, those aged 20 to 39, compared to the Ontario average. Meanwhile, nearby City of London has a higher representation of young adults, as young adults often relocate for the post-secondary education, jobs and career opportunities that the City of London and larger urban areas provide. Larger urban areas also tend to provide a range of housing options and other means of transportation besides personal automobile.
- **More older adults/young families:** Middlesex Centre has a higher proportion of adults aged 40 to 79, and also of youth up to age 19, than both the City of London and the Ontario average. Middlesex Centre's rural and small-town atmosphere, and lower housing costs compared to larger urban areas, make it attractive for smaller families.
- **Fewer older seniors:** Middlesex Centre has a lower proportion of adults aged 80 and over. Among other reasons to move to urban areas, older seniors may no longer be able to drive, and transportation alternatives to driving are limited in Middlesex Centre.

Exhibit 3.5 shows the historic change in age distribution in Middlesex Centre since 2006, and anticipated change to 2046. While the population of the municipality increased overall approximately 21% between 2006 and 2021 (from 15,595 to 18,935), the population aged 65 and older increased at a greater rate of 68% (from 2,215 to 3,575) over the same period. Adults aged 65 and older now comprise about 19% of residents in Middlesex Centre, up from 14% in 2006. This aging population trend is expected to continue to 2046, where a notable decline in the population under 19 between 2021 and 2046 is expected, while the share of the population aged 65 and older is forecasted to continue to grow.

PHASE 1: NEEDS AND OPPORTUNITIES

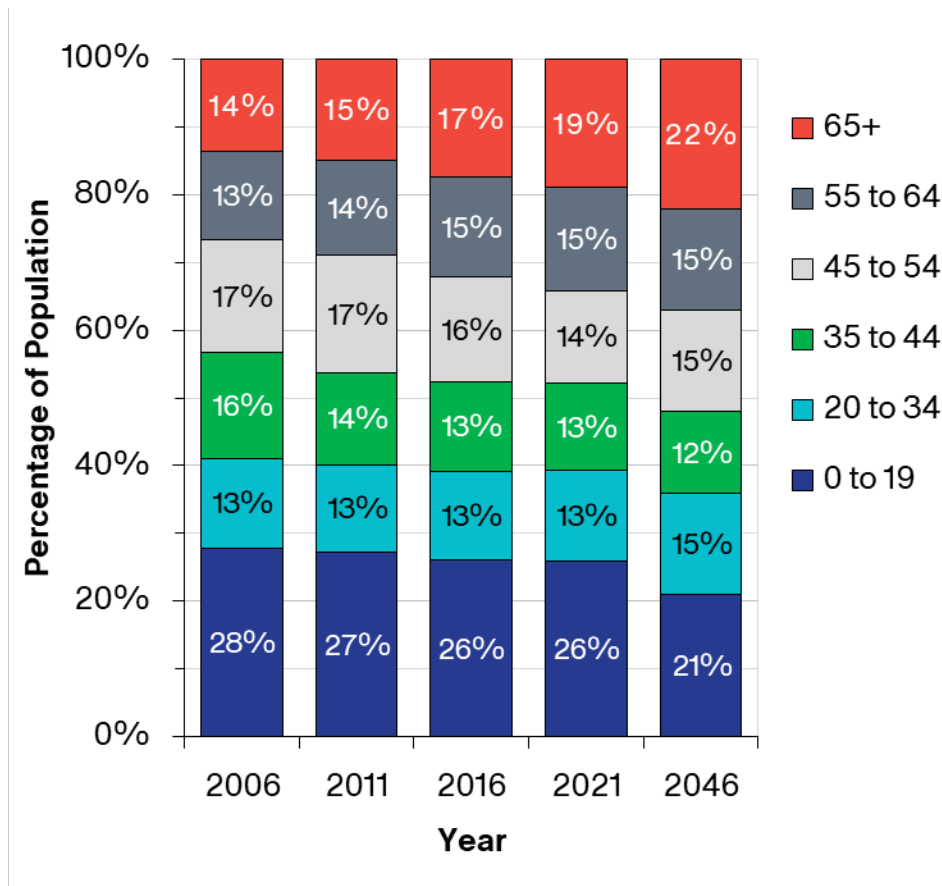
Exhibit 3.4: Population Distribution by Age Cohort, 2021: Middlesex Centre, London and Ontario



Data Source: Statistics Canada Census of Population, 2021

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 3.5: Middlesex Centre Past and Future Population by Age Cohort, 2006 to 2046



Data source: 2006 to 2021 data based on Statistics Canada Census of Population. 2046 forecasted data based on Watson & Associates Economists Ltd. *Official Plan Review – Growth Management Strategy Technical Report (2022)*, Figure 5-2.

The TMP must provide transportation alternatives for youth who may not yet have the means to drive, and also help residents to maintain their mobility as they age. For example, improving walkability through a complete network of connected sidewalks and safe crossings, as well as ensuring accessible transit opportunities, can help residents support their ability to age in place, and provides convenient, safe and reliable alternate options for those without access to a car, too young, or aging out of driving.

PHASE 1: NEEDS AND OPPORTUNITIES**3.5.3 Forecasted Population Growth in Middlesex Centre**

Exhibit 3.6 summarizes forecasted population growth in Middlesex Centre to 2046 (the TMP study horizon year), as described by Watson and Associates (2022)⁴. With an anticipated annual growth rate of 2.3%, the population of Middlesex Centre would double from 17,800 residents in 2016 to 35,600 by 2046. This growth is spread unevenly across 11 settlement areas throughout the municipality, with a large majority of this growth expected to occur in the Urban Settlement Areas of Komoka-Kilworth (63%) and Ilderton (20%). Community Settlement Areas are expected to accommodate 14% of the municipality's growth allocation—Delaware represents the bulk of this growth, driven by its proximity to London and supported by an Employment Area Settlement Area Boundary Expansion of about 135 gross hectares (Section 3.6.2). Population growth throughout the municipality's remaining rural areas over the next several decades is expected to be slow due to limited servicing available.

Exhibit 3.6: Middlesex Centre Population Growth Forecast, 2016 to 2046

Settlement	2016 Pop.	2021 Pop.	2046 Pop.	2016-2046 Growth	Growth Allocation	Annual Growth Rate
Ilderton	3,500	3,900	7,100	3,600	20%	2.4%
Komoka-Kilworth	4,600	5,700	15,900	11,300	63%	4.2%
Arva	500	600	1,000	500	3%	2.3%
Delaware	1,600	1,800	3,600	2,000	11%	2.7%
Hamlets / Other Rural Areas	7,600	7,700	8,000	400	2%	0.2%
Total	17,800	19,700	35,600	17,800	100%	2.3%

Note: Populations include approximate Census undercount and are higher than Census figures.

Data sources: Watson & Associates Economists Ltd. (2022), *Official Plan Review – Growth Management Strategy Technical Report*, Figure 6-2 – High Scenario, noted to include 3.5% Census undercount adjustment; 2021 figures are interpolated based on anticipated rate of growth between 2016 and 2046, and are approximately comparable to Statistics Canada population with an estimated 3.5% Census undercount adjustment applied.

⁴ Watson & Associates Economists Ltd. (2022), *Official Plan Review – Growth Management Strategy Technical Report*

PHASE 1: NEEDS AND OPPORTUNITIES

Middlesex Centre's population growth, like growth across Canada, will be largely driven by net migration among those 0 to 64, rather than by natural increase. The municipality's aging population over this period will largely be driven by the aging of current Baby Boomer (and Generation X) residents, an especially important consideration when planning an equitable transportation system inclusive of all ages and abilities. The appeal of rural living and the affordability of the municipality is also driving older adults to relocate to Middlesex Centre, largely from London, Waterloo Region and the Greater Toronto Area.

Middlesex Centre's proximity to London—the largest municipality and major economic and regional service hub in southwestern Ontario—expands access to goods, services, employment and education opportunities for residents, affording them the opportunities and benefits of the big city while maintaining the rural charm of smaller town living. As London also continues to grow and expand its regional role and commuter-shed in southwestern Ontario, Middlesex Centre will continue to be an attractive location for workers to live.

3.5.4 Forecasted Area Population Growth

The Ontario Ministry of Finance's projected population growth from 2021 to 2046 for the Middlesex Census Division (CD), which includes Middlesex County and the City of London, is shown in Exhibit 3.7. The CD's population is estimated to increase by approximately 43% by 2046, accommodating an additional 221,000 people to a total estimated population of approximately 737,000.

Meanwhile, Census Divisions adjacent to Middlesex also show strong population growth between 2021 and 2046, ranging from 8% growth in Chatham-Kent to 47% growth in Oxford. The forecasted growth in the Middlesex Census Division exceeds both the average growth of the surrounding Census Divisions (27%) and the projected growth province-wide (38%).

This strong regional growth, especially within the City of London, means that there will be a significant increase in travel demand throughout the region, with more people using Middlesex Centre roads to travel to, from and through the municipality. This emphasizes the need to ensure that transportation infrastructure and services can meet this growing demand.

PHASE 1: NEEDS AND OPPORTUNITIES**Exhibit 3.7: Projected Population Growth for Middlesex County and Adjacent Municipalities, 2021 to 2046**

Geography/ Census Division (CD)	2021 Population	2046 Population	2021-2046 Growth	Percent Increase
Middlesex Centre	18,928	34,300	15,372	81%
Rest of Middlesex County	73,862	120,848	46,986	64%
City of London	422,324	581,600	159,276	38%
Middlesex CD	515,114	736,748	221,634	43%
Perth CD	84,062	115,157	31,095	37%
Oxford CD	124,936	183,132	58,196	47%
Elgin CD	97,968	132,174	34,206	35%
Chatham-Kent CD	107,923	116,560	8,637	8%
Lambton CD	132,611	147,335	14,724	11%
Huron CD	63,912	84,897	20,985	33%
Nearby CDs Average	101,902	129,876	27,974	27%
Ontario	14,826,276	20,418,263	5,591,987	38%

Note: Middlesex Census Division (CD) includes Middlesex County and the City of London. Population figures do not include Census undercount estimates.

Data Source: Analysis of Ontario Ministry of Finance population projections (2022)

3.6 Economy

Located in the centre of southwestern Ontario, Middlesex Centre is a largely agricultural community that provides residents and visitors both rural charm and urban amenities. It is characterized by a rich mix of farmland, together with urban settlement areas, community settlement areas and hamlets. In addition to agriculture, the economic base of Middlesex Centre includes other key sectors.

The Municipality's proximity to the City of London is a key feature in making Middlesex Centre a desirable place to live and conduct business. London is a major regional centre for employment, the largest city in southwestern Ontario and one of the fastest growing municipalities in Ontario. Approximately three quarters of the Middlesex Centre labour force commutes to London for employment (discussed further in Section 6.1). London is also home to major post-secondary institutions, regional healthcare facilities, major satellite offices and company headquarters, and commercial districts.

PHASE 1: NEEDS AND OPPORTUNITIES

The municipality's strategic location along Provincial Highways 401 and 402, as well as its proximity to three border crossings to the United States—Sarnia-Port Huron, Windsor-Detroit and Fort Erie-Buffalo—make Middlesex Centre an attractive location for new industry.

As Canada continues to urbanize, Middlesex Centre is in a unique position, as it balances rural charm with a growing population and economy, while leveraging the benefits of London and southwest region's economic strength.

3.6.1 Industry Sectors

With over 500 working farms of various sizes⁵ and a large majority of Middlesex Centre land used for crops or pasture, agriculture is an important and multi-faceted industry with a strong history in Middlesex Centre's economy. Exhibit 3.8 shows the diversity and distribution of agriculture land use in Middlesex Centre—a total of 96% of farmed land is used for corn, soybeans, winter wheat or pasture—and is farmed by families, or local or temporary migrant workers.

The many agricultural farms across the municipality represent generators of major goods movement, and the agriculture industry has specific needs, e.g. large machinery often has difficulty when using local roadways.

However, the employment base in Middlesex Centre also includes a range of other sectors. In 2021, the top five employment sectors by industry based on number of employees with a **fixed-place-of-work in Middlesex Centre** were as follows⁶:

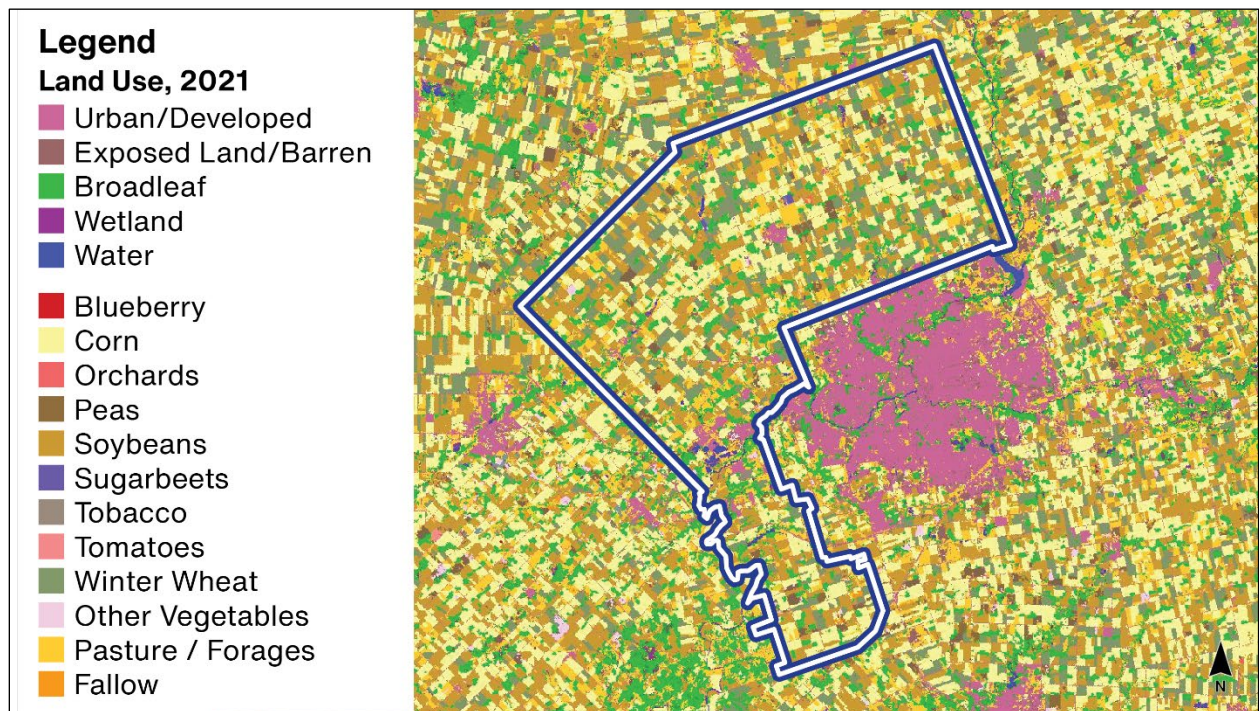
- Agriculture, forestry, fishing and hunting (13.9%);
- Manufacturing (10.4%);
- Construction (10.0%);
- Educational services (9.6%);
- Health care and social assistance (8.4%);
- Professional, scientific and technical services (6.5%); and
- Retail trade (5.5%).

⁵ Ontario Ministry of Agriculture, Food and Rural Affairs (2023). Ontario business, agri-food, and farm data profiles. <<https://data.ontario.ca/dataset/ontario-farm-data-by-county>>.

⁶ Ibid., citing Statistics Canada (2021).

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 3.8: Crop Inventory in Middlesex Centre



Source: Adapted from Government of Canada, Agriculture and Agri-Food Canada (2022). 2021 Canadian Crop Inventory. Municipality boundary emphasized. <<https://www.agr.gc.ca/atlas/apps/metrics/index-en.html?appid=aci-iac>>.

In 2021, the **labour force of workers residing in Middlesex Centre** included 10,050 people aged 15 and over. The top five industries for this labour force are as follows⁷:

- Health care and social assistance (15.4%);
- Construction (10.5%);
- Retail trade (9.4%);
- Educational services (9.3%);
- Manufacturing (6.8%);
- Professional, scientific and technical services (also 6.8%); and
- Agriculture, forestry, fishing and hunting (6.6%).

⁷ Statistics Canada (2023). Census Profile, 2021 Census of Population - Industry - Sectors - North American Industry Classification System (NAICS) 2017. <<https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E>>

PHASE 1: NEEDS AND OPPORTUNITIES

Agriculture, tourism and developing manufacturing and logistics industries are important drivers of the Municipality's economy, and sustained population growth has helped to drive construction employment as well as population-related jobs.

Middlesex Centre benefits from close proximity to major employment markets, notably London, and has access to skilled labour, post-secondary institutions, health care, and finance. The municipal road network connects with the County road network and Provincial highway system, which provide convenient access for residents and visitors and to connect industries to broader markets.

Middlesex Centre is growing, and its diversifying and expanding employment base is supported by its Official Plan, as it directs locations of industrial and business uses within settlement areas to lands designated Settlement Employment.

Vibrant main streets in the Municipality's population centres support commercial activity and will continue to generate tourist activity. These areas are called "Village Centres" and will continue to play an important role in Middlesex Centre, as the Official Plan sets to maintain them as traditional centres of retail and services, community gathering and community identity (see Section 4.3.2).

Commercial vehicles that bring goods to markets depend on a connected and efficient network of local, County and Provincial roads to support the industry.

3.6.2 Current and Forecasted Economic Growth

Middlesex Centre benefits from being an integral part of an economically competitive region, with trickle-down effects from wealth generated by the regional economy and export-based sectors (agriculture, manufacturing, research and development, etc.) stimulating population-related employment that serve community-based economies such as retail, food, accommodation and other services.

Exhibit 3.9 shows the estimated distribution and forecasted growth in employment in Middlesex Centre. Total employment in Middlesex Centre is anticipated to nearly double from approximately 6,560 jobs in 2021 to 11,650 jobs by 2046. A large planned industrial complex southeast of Delaware (described in Section 3.6.3) is anticipated to host two-thirds of this growth.

PHASE 1: NEEDS AND OPPORTUNITIES**Exhibit 3.9: Middlesex Centre Employment Distribution and Growth, 2016 to 2046**

Settlement	2016 Est. Emp.	2016-2021 Growth	2021 Est. Emp.	2021 - 2046 Growth	2046 Emp	2021-2046 Share of Growth	2021-2046 Growth Rate
Ilderton	1,510	170	1,680	470	2,150	9%	28%
Komoka-Kilworth	540	480	1,020	580	1,600	11%	57%
Arva	450	0	450	110	560	2%	24%
Delaware	1,660	80	1,740	3,430	5,170	67%	197%
Hamlets/ Other Rural	1,640	30	1,670	500	2,170	10%	30%
Total	5,800	750	6,560	5,160	11,650	100%	89%

Data sources:

2016 Total Employment: Statistics Canada Journey-to-Work data and work status - includes employees with no fixed place of work, including building and landscape contractors, travelling salespersons and independent truck drivers.

2016 Employment distribution – Total employment distributed based on work trip destinations in the 2016 London Household Travel Survey.

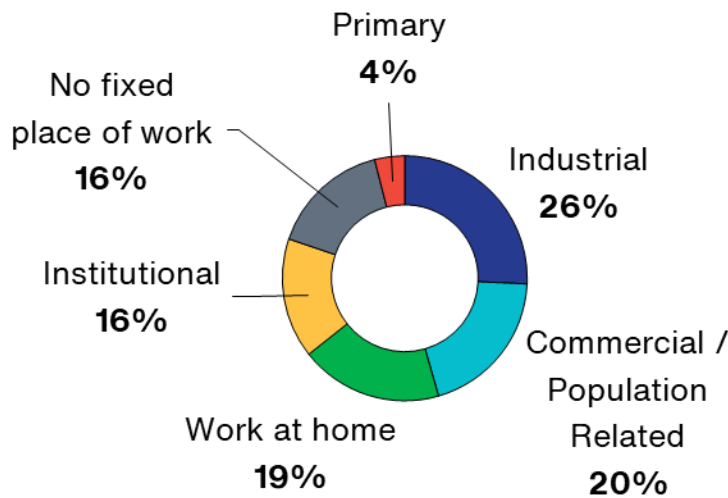
2016-2021 Growth, 2021-2046 Growth: Watson & Associates Economists Ltd. (2022).

Official Plan Review – Growth Management Strategy Technical Report (2022), Table D-3D
Remaining figures are calculated based on the above.

Exhibit 3.10 shows the forecasted share of growth by employment sector in Middlesex Centre from 2016 to 2046. Industrial, commercial and institutional employment-related jobs (i.e. land-based sectors) are expected to account for the over 60% of employment growth, largely in a new employment area near Delaware (described below). Work-at-home and no-fixed-place-of-work are also expected to comprise 35% of employment growth. Finally, the primary sector (i.e. agricultural economy) is only expected to grow 4% over the forecasted period. New agricultural-supportive development (e.g. food processing), as well as the expansion of existing businesses are needed to continue to support the Municipality's agricultural economy.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 3.10: Share of Employment Growth by Sector in Middlesex Centre, 2016 to 2046



Data source: Watson & Associates Ltd. (2022). *Official Plan Review – Growth Management Strategy Technical Report*, Figure 5-7

Transportation solutions will be needed to support this economic growth and enable people to access these industries for work—especially in and around Delaware—while facilitating safe and efficient goods movement.

3.6.3 Economic Opportunities and Goods Movement Generators

This section provides an overview of three major economic opportunities in the Middlesex Centre area.

Delaware Employment Area

Economic diversification is a high priority for the Municipality⁸, and economic development drives the need for an expanded labour force, which is supported by population growth. As part of the Middlesex Centre Official Plan Review, the Municipality undertook an Employment Area Settlement Area Boundary Expansion Analysis to assess prospective locations for the development of a new business

⁸ Watson & Associates Economists Ltd. (2020). *Economic Diversification Discussion Paper*.

PHASE 1: NEEDS AND OPPORTUNITIES

park to support an array of domestic and foreign industrial and commercial businesses. Target sectors for the new employment area include the following:

- Manufacturing;
- Distribution and logistics;
- Professional, scientific and technical services/business services;
- Research and development;
- Agri-business; and
- Food and accommodation services / and other employment supportive uses.

Land south and east of the Delaware settlement boundary was selected as the preferred location for a new employment area; this location is shown in Exhibit 3.11 and has a total of about 135 developable hectares⁹. This new employment area can expect an increase in commercial vehicle traffic picking up and dropping off goods, as well as workers accessing the new business park.

Supporting connections to Highway 401 and Highway 402 is important to accommodate this future industrial and commercial growth, as well as to ensure commercial vehicles have more direct access to the regional highway network. County Road 15 (Carriage Road) may be a suitable candidate for a new interchange at Highway 402, an endeavor that would require support and coordination between the Municipality, the County and the Province.

Major Area Employment Opportunities

Two additional new major employment opportunities in the vicinity of Middlesex Centre will have a significant impact on goods movement and commuting flows in the area:

- **Southwold Amazon Fulfillment Centre:** A new Amazon Fulfillment Centre in Southwold, immediately northwest of St. Thomas, will generate considerable commercial vehicle truck traffic in and beyond, with the

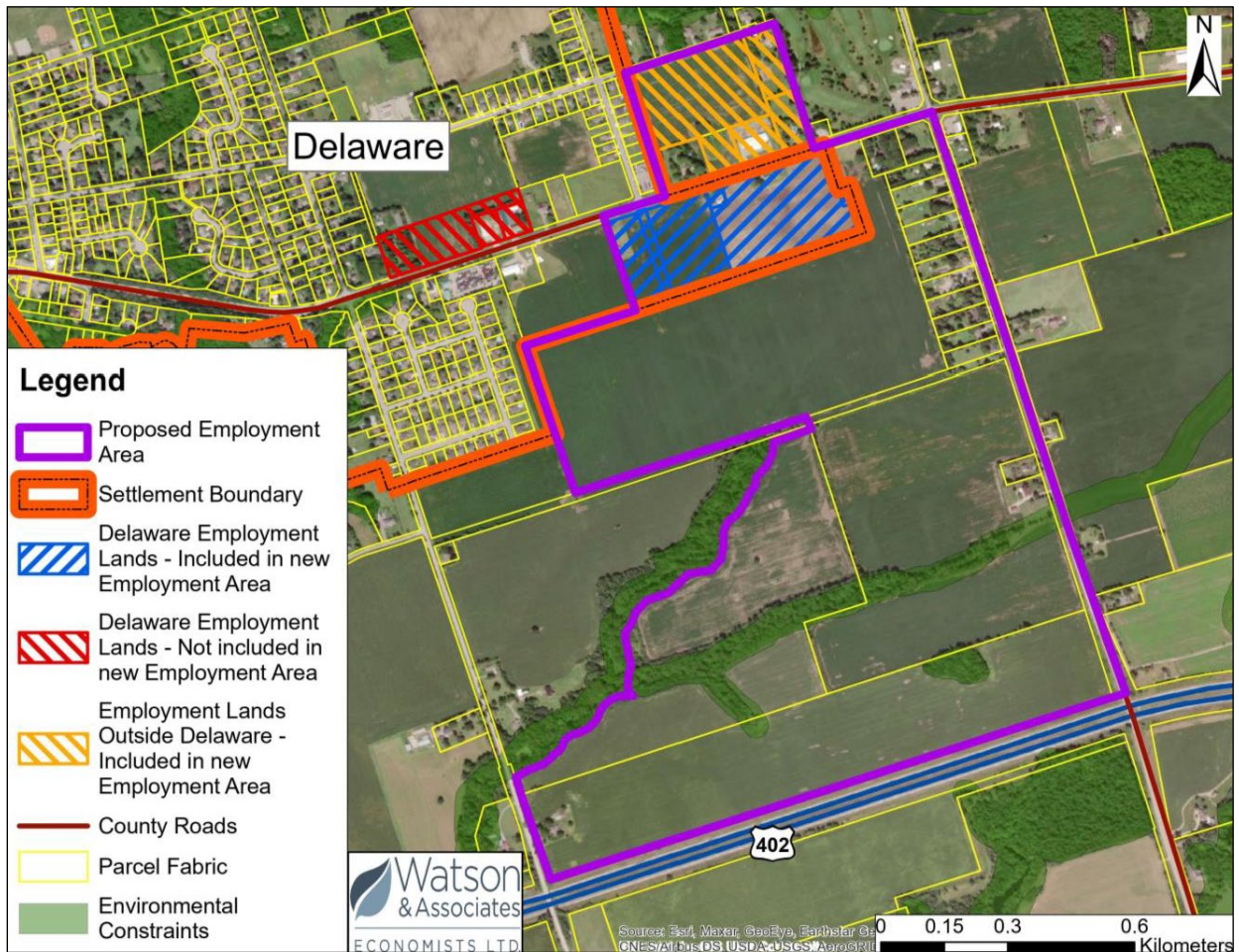
⁹ As noted in the Middlesex Centre Official Plan (2023), “The Municipality, the County and the Ministry of Transportation (MTO) will work cooperatively with respect to the land use planning and its associate access connections within the Ministry’s permit control area adjacent to all provincial highways and interchanges within the Municipality, in order to protect for the future safety, operation and capacity of the provincial, county and municipal highway networks for the movement of people and goods” (Section 9.4.1 n).

PHASE 1: NEEDS AND OPPORTUNITIES

potential to increase goods movement patterns through Middlesex Centre as well as commuting traffic.

- St. Thomas Electric-Vehicle Battery Manufacturing Plant:** A planned 150-hectare electric vehicle battery manufacturing facility on the east side of St. Thomas is expected to generate significant employment once complete in 2027—up to 3,000 direct jobs and 30,000 indirect jobs¹⁰.

Exhibit 3.11: Preferred Location of New Employment Area Southeast of Delaware



Source: Watson & Associates Ltd (2022). *Employment Area Expansion Analysis*, Figure 4-1

¹⁰ Government of Ontario Newsroom (2023). <https://news.ontario.ca/en/release/1002955/volkswagens-new-electric-vehicle-battery-plant-will-create-thousands-of-new-jobs> April 21. Accessed May 2023.

4. Planning and Policy Context

The Municipality of Middlesex TMP must align with existing municipal, County and Provincial policies, and requires a coordinated approach between land use planning and transportation planning.

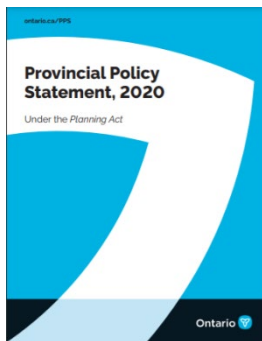
The TMP is also informed by the plans and policies of adjacent municipalities, in particular the City of London, to align and coordinate with these to the extent possible. These plans and policies support the development of a safe and reliable multi-modal transportation system and ensures the TMP reflects the values, priorities and initiatives in the Municipality and conforms to direction set by the Province.

This section provides an overview of policies of the following jurisdictions:

- Province of Ontario;
- Middlesex County;
- Municipality of Middlesex Centre;
- City of London; and
- Adjacent First Nations.

4.1 Provincial Policies and Initiatives

4.1.1 Provincial Policy Statement (2020)



The Provincial Policy Statement (PPS), issued under the Provincial *Planning Act, 1990*, provides strategic policy direction to municipalities related to land use planning and development. It includes policies for managing growth, managing natural resources, transportation, environmental protection, and public health and safety.

All municipal plans, including the Middlesex Centre TMP, must conform to the policy directions outlined in the PPS.

The Provincial Policy statement includes policies that speak to the following, among others:

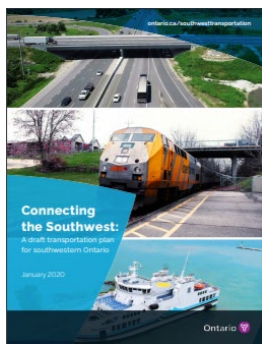
- coordinating between different levels of government;

PHASE 1: NEEDS AND OPPORTUNITIES

- promoting healthy, active communities;
- providing safe and energy efficient transportation systems to facilitate the movement of people and goods;
- making efficient use of existing and planned infrastructure;
- maintaining or improving connectivity within and among transportation systems and modes; and
- promoting land uses should that minimize trip lengths and support transit and active transportation.

Selected policies are listed verbatim in Appendix A.

4.1.2 Connecting the Southwest: A Draft Transportation Plan for Southwestern Ontario (2020)



In January 2020, the Ministry of Transportation of Ontario (MTO) released *Connecting the Southwest*, a draft transportation plan that outlines a vision and the following five goals to improve transportation in the region:

- getting people moving and connecting communities;
- supporting a competitive open for business environment;
- improving safety;
- providing more choice and convenience; and
- preparing for the future.

The draft plan also notes ongoing or near-term actions under each goal, including the following that may impact the transportation network in Middlesex Centre:

- Improve intercommunity bus service: Ontario is reviewing the intercommunity bus sector and ways to better deliver services to make it easier for people to travel between communities (Action 1).
- Work with municipal and federal partners to support active transportation connections, such as cycling paths and trails within and between southwestern Ontario communities and connections to transit systems [...] (Action 12).

PHASE 1: NEEDS AND OPPORTUNITIES

- [...] Ontario is exploring opportunities to provide additional commuter parking lot spaces to make it easier to carpool and connect to transit services [...] (Action 14).
- In cooperation with municipalities, Ontario will review the rules around reduced load periods for the agriculture, agribusiness and trucking industry to help cut red tape and support businesses, while protecting road infrastructure [...] (Action 20).
- Actively advancing planning and design work for Highway 401 from London to Tilbury will help make it safer by widening the highway to six lanes and installing a concrete median barrier. [...] (Action 23).
- Investigate and identify priority actions to integrate different modes – rail, intercommunity bus, public transit, ridesharing, scooters, bikes – to make it easier for people in southwestern Ontario to get around and provide more options to get there [...] (Action 34).

The Province is currently building on this initial strategy in preparing a long-term strategy for the southwestern Ontario region.

4.1.3 Province-Wide Cycling Network

The Province-Wide Cycling Network Study builds on #CycleON (2013), Ontario's 20-year strategy to help promote cycling as a viable transportation method for people of all ages and abilities. #CycleON Action Plan 1.0 was released in 2014 and Action Plan 2.0 in 2018.

Part of the Province's strategy was the development of a province-wide cycling network and implementation plan. This cycling network has connections through Middlesex Centre, as will be shown and discussed in Section 10.2.

4.1.4 Conservation Authorities

Protection of natural heritage in Middlesex Centre, including hazard lands such as flood prone areas, is important to ensuring the prosperity, health and sustainability of the municipality and its residents. Conservation areas and other environmentally significant areas in Middlesex Centre help provide clean air and water, maintain the regulation of water levels, and support a healthy agricultural system—all aiding a high quality of life, supporting human health, and supporting a strong economy. Five Provincial Conservation Authorities are active within Middlesex Centre, each based on one of the five watersheds represented in the Municipality:

PHASE 1: NEEDS AND OPPORTUNITIES

- Upper Thames River;
- Ausable Bayfield;
- St. Clair Region;
- Lower Thames Valley; and
- Kettle Creek.

The mandate of Conservation Authorities is to protect people and property from flooding and natural hazards and to conserve natural resources for economic, social and environmental benefits¹¹.

4.2 Middlesex County Policies and Initiatives

4.2.1 County Official Plan (2023)



Middlesex County's Official Plan update was adopted in July 2023. It outlines a long-term vision for the County and provides guidance to local municipalities in preparing local official plans and zoning by-laws. The plan incorporates new Provincial legislation and policies to be consistent with the *Provincial Policy Statement* and the Province's population and employment forecasts, and highlights new policies and directives to manage growth, protect agriculture and the natural environment in the County through the year 2046.

Transportation policies play a key role in the County's vision of its future. The County's aim is to foster the development of a strong and efficient transportation system alongside an accompanying Cycling Strategy (Section 4.2.2, below) that will accommodate the safe and efficient movement of County residents.

Selected County Official Plan policies are summarized below (additional detail is included in Appendix A):

- **Economic Development:** Local municipalities are encouraged "to promote a high standard of urban design by prioritizing principles such as pedestrianization, compact form, mixed-use high quality functional space that include natural and built features, accessibility and universal design,

¹¹ Conservation Ontario. Natural Champions: Making a Difference.

<<https://conservationontario.ca/about-us/conservation-ontario>> Accessed April 2023.

PHASE 1: NEEDS AND OPPORTUNITIES

to create healthy vibrant communities which attract investment.” The County will also “support local municipalities to promote economic development opportunities adjacent to Provincial 400 series highways [...]” (Policy 2.3.4). (The latter aligns with Middlesex Centre plans for a large industrial development near Delaware, near Highway 402.)

- **Transportation Hierarchy:** Roads are classified into Provincial highways, County roads, Municipal roads and private roads. “The County Road Network [...] provides for the efficient movement of traffic between provincial freeways and highways and municipal roads throughout the County and to surrounding Municipalities. [...] County roads generally function as arterial or collector roads. [...] Based on the volumes, types and nature of the traffic, municipal roads may be classified as arterial, collector or local roads in the official plan of a local municipality” (Policy 9.4.2).
- **General Policies:** Selected general transportation policies include the following:
 - defining a hierarchy of roads to help avoid traffic conflicts
 - addressing cross-boundary traffic by establishing a network of roads coordinating the road hierarchy across municipal boundaries;
 - encouraging the development and maintenance of an integrated transportation system that supports a variety of safe, sustainable and energy-efficient modes of transportation;
 - encouraging safe, convenient and visually appealing pedestrian and cycling infrastructure for all ages and abilities;
 - encouraging the preservation and reuse of abandoned railway corridors;
 - encouraging consideration of accommodating the movement of agricultural equipment;
 - encouraging greater electric vehicle usage through the provision of charging infrastructure (Policy 2.3.4).

4.2.2 Cycling Network (2018)



The *Middlesex County Cycling Strategy* marks the County's first comprehensive, long-range cycling strategy toward improving cycling in the County. The Middlesex County Cycling Strategy was developed in 2018 for the purpose of it and enhancing cycling across Middlesex County, its local municipalities, and other partners. The Cycling Strategy builds on initiatives by local municipalities and aligns with the Province's Cycling Network 4.1.3). It includes a long-term, County-wide network to be used to guide planning, design, implementation, and operation of cycling infrastructure and programming.

The County's planned network within Middlesex Centre is discussed further in Section 10.

To manage costs, the Municipality and the County plan to implement the Cycling network at the same time as road rehabilitation and resurfacing.

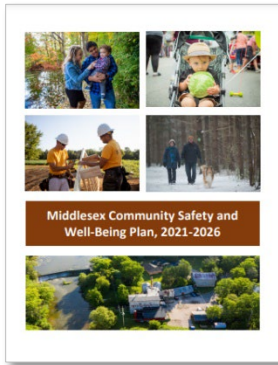
Given the publication of the Province's updated cycling facility guidelines, *Ontario Traffic Manual – Book 18 – Cycling Facilities*, in 2021, together with changes in development and traffic levels, facility types identified in the County's plan will need to reviewed to ensure the identified type is still suitable.

4.2.3 Rural Transit Needs Assessment Study (2023)

Middlesex County launched its fixed route inter-community transit service, Middlesex County Connect, in 2020, supported by funding from the Province's Community Transportation Grant Program, which is set to end in 2025.

In 2022, the County embarked on a Rural Transit Needs Assessment Study (with Arcadis IBI Group) with a view to establishing a sustainable, equitable, and comprehensive public transportation service for the County. The study determined a strong need for continued transit service provision. The assessment explored the County's demographics, travel demand, and socioeconomics to determine the potential ridership base and prioritization of need. As a result of the study, an updated transit service structure was implemented in May 2023 (as shown in Section 9.2) and a year 2025 service plan developed.

4.2.4 Middlesex Community Safety and Well-Being Plan, 2021-2026



The *Middlesex Community Safety and Well-Being Plan, 2021-2026* is a five-year strategy aimed at promoting initiatives that will improve the safety, health and well-being of Middlesex County residents. The process included data and asset mapping and community engagement. The plan outlines strategies and actions across four priority areas:

- Health;
- Housing and homelessness;
- Quality of life; and
- Public safety.

Transportation falls within the Quality of Life priority area. The plan includes five goals with a total of 18 associated objectives:

- Goal 1: Make cycling more convenient, safe and enjoyable for residents and visitors;
- Goal 2: Ensure access to affordable and reliable community transportation;
- Goal 3: Road infrastructure is safe and well-maintained;
- Goal 4: Advocate for the presence of inter-provincial/national transportation systems; and
- Goal 5: Reduce greenhouse gas emissions by modelling through municipal governance.

4.3 Municipality of Middlesex Centre Policies and Initiatives

Middlesex Centre's TMP will build on its *Strategic Plan (2021)*, *Official Plan* (update awaiting approval), *Trails Master Plan (2014)*, among others, summarized below. It will also align with findings and recommendations of its ongoing Servicing Master Plan development.

PHASE 1: NEEDS AND OPPORTUNITIES

4.3.1 Strategic Plan (2021)



The *Middlesex Centre Strategic Plan 2021-2026* outlines a framework to help guide decision-making, inform long-term plans, and set priorities for the Municipality to help achieve the vision:

A thriving, progressive and welcoming community that honours our cultural roots and embraces our natural spaces.

The Strategic Plan is driven by five priorities, as shown in Exhibit 4.1, which were identified by Council in consultation with Middlesex Centre residents, businesses and community groups.

Exhibit 4.1: Middlesex Centre Strategic Priorities



Source: Middlesex Centre Strategic Plan 2021-2026 (2021)

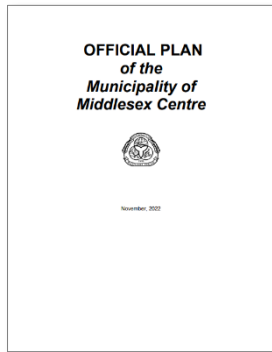
While the Municipality’s TMP development supports all five strategic priorities, it is a focus of the priority of “Sustainable Infrastructure and Services”; under which the Strategic plans outlines the objective of improve safety for road users (objective 4.1):

- By expanding the network of trails and bike lanes;
- By addressing road safety challenges; and
- By supporting the implementation of Middlesex County’s Plan for the Glendon Drive corridor.

4.3.2 Official Plan (2023)

The *Official Plan of the Municipality of Middlesex Centre* is the Municipality’s overarching planning document and growth management strategy, outlining the

PHASE 1: NEEDS AND OPPORTUNITIES



goals, objectives and policies to direct land use, development and growth over a 20-year planning horizon, through 2046. An Official Plan review has been ongoing since 2020 to ensure that the plan conforms with the latest Provincial policies as well as with the updated *Official Plan of the County of Middlesex*. In May 2022, Middlesex Centre Council approved the Official Plan Amendment by-law; however, approval of the updated Middlesex Centre Official Plan is currently on-hold pending notification from the

Ministry of Municipal Affairs and Housing.

The *Official Plan's* includes 14 **General Transportation Goals** (policy 9.4.1 of the plan), listed verbatim:

- a. To facilitate the efficient movement of people and goods to and from the Municipality, and within the Municipality.
- b. To establish and maintain a transportation system of local roads in the context of County and Provincial transportation systems, to ensure free and appropriate movement of traffic within and through the Municipality.
- c. To maintain and improve transportation safety within the Municipality.
- d. To promote the preservation of roads considered scenic and to preserve their scenic character in the context of development proposals or proposed changes to the transportation system.
- e. To consider bicycle and pedestrian transportation options within, and where feasible, between Municipal settlement areas. Such options may be considered further through a Municipal Parks and Recreation Master Plan and Trails Master Plan.
- f. To promote and encourage the establishment of safe, convenient and visually appealing pedestrian opportunities within settlement areas.
- g. To limit direct access to County Roads where access is available by a local road.
- h. To encourage the conversion of abandoned rail right-of-ways to private ownership or to public uses.

PHASE 1: NEEDS AND OPPORTUNITIES

- i. To promote the establishment of a Municipal wide trail system.
- j. To consider the need for transportation options for special needs residents of the Municipality.
- k. To consider alternative design standards relative to municipal rights-of-way.
- l. To limit direct access to Provincial Highways where access is available by a local road.
- m. To promote development that is designed to be sustainable, to support public transit and to be oriented to pedestrians.
- n. The Municipality, the County and the Ministry of Transportation (MTO) will work cooperatively with respect to the land use planning and its associate access connections within the Ministry's permit control area adjacent to all provincial highways and interchanges within the Municipality, in order to protect for the future safety, operation and capacity of the provincial, county and municipal highway networks for the movement of people and goods.

Road Classifications: In the Official Plan, all Middlesex Centre roads are classified as "Local roads", without further sub-classification. The exception is in the Komoka-Kilworth Secondary Plan, which also identifies selected Middlesex Centre roads as Future Collector Roads or Proposed Collector Roads, including Crestview Drive, Daventry Way and Doan Drive. Policy 5.7.12 a. x. of the plan notes, "The planned function of Future Collector Roads is to serve light to moderate volumes of local traffic at low speeds for short travel distances providing connections between Local Roads and Arterial Roads while allow direct access to individual properties. Sidewalks shall be required on both sides of Collector Roads." The roads currently identified as Future or Proposed Collector Roads currently have the same cross-section as local roads in Komoka Kilworth.

The Official Plan also includes the following selected policies:

- **Traditional Town and Country Planning (Policy 1.7):** These policies include promoting and protecting the predominantly agricultural character and economy of the Municipality (in part by preventing non-agricultural urban uses outside of settlement areas), providing an efficient and safe

PHASE 1: NEEDS AND OPPORTUNITIES

transportation network “including pedestrian and cycling movement wherever possible and appropriate within settlement areas”, and providing “a high level of street and pedestrian connectivity within settlements to facilitate walkability and a highly connected village pattern.”

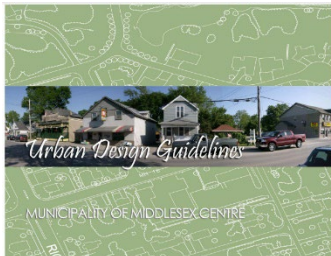
- **Policies for Multi-Use Trails (Policy 9.4.6):** These policies include, among others, that:
 - trails are intended not only for leisure but also for utilitarian purposes, e.g. providing connections to commercial shopping centres, community facilities, parks, schools, etc.;
 - should be perceived as safe by users; and
 - community partners should be engaged to assist in the developing and/or maintaining municipal trail routes and coordination with the County and adjacent municipalities will also be required.
- **Settlement Area Policies and Land Use Designations (Policy 5.0):** Middlesex Centre’s Growth Management Hierarchy consists of Urban Settlement Areas, Community Settlement Areas and Hamlet Settlement Areas. These help structure land use and growth, while also providing a focus for transportation planning and services.
 - **General Village Centre Goals (Policy 5.3.1):** These policies include “to encourage ease of access to Village Centres through multiple travel options, including pedestrian and cycling traffic, and to encourage compatible integration of residential uses, including residences above shops” and “To establish or strengthen linkages between Village Centres, and the tourism industry within the Municipality.”
 - **Village Centre Policies (Policy 5.3.2):** Among these policies is a parking policy: “Parking within Village Centres will be provided in the context of new development. Cash-in-lieu of parking may be collected by the municipality to facilitate the establishment of appropriately located municipal parking. All parking will be designed and landscaped to de-emphasize its effect on the physical appearance of the Village Centre.
- **Komoka-Kilworth Secondary Plan (Section 5.7):** The Komoka-Kilworth has a special focus in the Official Plan. Transportation Policies in the Komoka-Kilworth Secondary Plan (Section 4.7.12) note that “The existing and future transportation system shall include a continuous linked network of Arterial, Collector and Local Roads, on-road pedestrian and cycling facilities and MultiUse Trails [...]”. It maintained the arterial nature of Glendon Drive, with its planned function being “to serve high volumes of

PHASE 1: NEEDS AND OPPORTUNITIES

local and regional traffic movements at medium to high speeds”, with limited access. “Within the designated Village Centre area it is intended that Glendon Drive will be designed as a traditional village main street with street oriented development”.

- **Policies For Natural Areas and Natural Hazard Areas (Section 3.0):** “It is a priority of this Plan to protect, and wherever possible enhance, significant natural features and functions for the long term from unacceptable impacts. It is further a priority to prevent or reduce the risk to public safety and property from natural hazard processes including flooding and unstable slopes”.

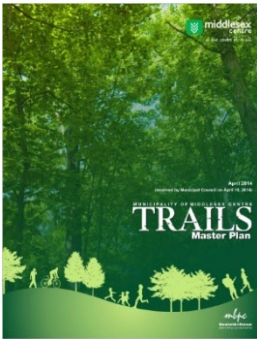
4.3.3 Urban Design Guidelines (2019)



Middlesex Centre’s 2019 *Urban Design Guidelines: Guidelines for New Residential Neighbourhoods* refers to the following street classifications, and provides guidance for developments along these types of roadways:

- Major Road Edges;
- Gateway Streets; and
- Local Streets.

4.3.4 Trails Master Plan (2014)



The *Middlesex Centre Trails Master Plan* was prepared to guide the development of future trails and supporting amenities, focusing on pedestrian pathways, sidewalks and trail connections.

Recommended conceptual trail network developed to include 101 km of trails, and an implementation phasing of short, medium and long term. This plan is discussed further in Section 11.1.

4.3.5 Vision Zero



Middlesex Centre's Vision Zero Road Safety Campaign is a Council-endorsed strategy focused on promoting road safety through dedicated Vision Zero initiatives. These include the following:

- **Speed Reduction Campaigns:** The “Respect the Limit Speed Reduction Campaign” is an initiative that promotes obeying the posted speed limit by offering Middlesex Centre residents and businesses free “Respect the Limit” lawn signs. Similarly, Middlesex Centre has launched the “Safety Blitz” campaign that educates residents about on driving safety in school zones and around buses, as well as road safety education for youth.
- **Community Safety Zones:** Community safety zones have been established in areas of special safety concern, including areas near schools, playgrounds and senior citizen residences. Speed limits in community safety zones have been reduced to 40 km/h and traffic violations in them result in doubled fine.
- **Traffic Calming Initiatives:** Numerous traffic calming measures have been employed in Middlesex Centre as part of its Vision Zero campaign. **Centre-line Markers** have been installed on streets with speeding concerns and **temporary speed cushions** have been installed in residential areas. As well as these initiatives, Council continues to identify opportunities for additional traffic calming measures on local streets, including ways to introduce complete streets design principles in new developments through reviews of and updates to the Municipal Design Standards.
- **Enforcement:** To assist in road safety enforcement, Middlesex Centre has introduced opportunities for residents to request the installation of speed radar signs through consultation with Middlesex Centre Public Works and Engineering and at the discretion of Middlesex Centre Staff.

4.3.6 Age-Friendly Community Action Plan (2022)



Middlesex Centre's *Age-Friendly Community Action Plan* (2022) aims to foster the ongoing improvement and resilience of Middlesex Centre.

The Plan includes concerted actions geared towards the Town's older adults, seniors, and people living with disabilities by establishing accessible environments that are supportive of independent and active living. Approximately 6,600 residents in Middlesex Centre are aged 55 and over, representing roughly one third of the population. By 2046, the number of older adults and seniors is anticipated to double, meaning initiatives and programs aimed at ensuring age-friendly design, particularly as they pertain to transportation and mobility, are crucial.

The condition and design of transportation-related infrastructure comprises a core action area of the Plan, with considerations spanning road, path, trail, sidewalk networks and signage under the shared objective of increasing access to reliable and affordable transportation options in the Town. Consultation conducted to inform the plan found that Middlesex residents seek better active transportation options and infrastructure, including bike lanes, pedestrian crossings, and road improvements to facilitate walking. Similarly, residents indicated their desire for better public transportation options that are affordable and responsive to the needs of elderly users and people with disabilities. A series of transportation-related actions are outlined, each with accompanying timeframes and stakeholder groups:

- **Create safe options for active transportation and motorized scooters:** This action involves continuing to expand and improve the bicycle network, focusing on strategies that will ensure safety and accessibility. Similarly, the action underscores the need for additional bike lanes, paved shoulders, and cycling infrastructure where feasible. Among other supporting sub-actions, the objective of this action area is to develop Middlesex Centre into a bicycle-friendly community wherein more users, and particularly the Town's older adult population, are encouraged to cycle as a means of leisure, exercise and transportation.
- **Increase the range of public and private transportation options for residents:** This action is focused on enhancing the availability and increasing the range of transportation options for residents. Exploring options for the expansion of

PHASE 1: NEEDS AND OPPORTUNITIES

public transit opportunities across and beyond the Town, as well as considering the introduction of new private transportation services such as taxi, ride-hailing and car-sharing, the action broadly aims to increase awareness of the transportation needs of older adults and investigate solutions that address them.

- **Improve safety for all road users:** As in other Plans, this action is focused on improving road safety in Middlesex Centre through strategies and infrastructure that accommodate the needs of diverse road users. The action outlines the need to identify and refine criteria for traffic calming measures and means to improve the pedestrian experience through physical streetscape interventions, including the installation of buffers, accessible pedestrian signals, wayfinding, and enhanced road crossings.

4.3.7 Community Improvement Plan (2020)

The *Middlesex Centre Community Improvement Plan* has limited policy and project areas related to transportation. The most pertinent program involves the issuing of grants up to \$2,500 offered by Middlesex Centre to property owners to fund retrofits or modifications to improve external accessibility to commercial, tourist or recreational properties to bring them into compliance with the Accessibility for Ontarians with Disabilities Act. Eligible projects include the installation of new wheelchair access ramps, leveling or repairs to pathways and building accesses to improve accessibility, and improvements to stairways.

4.4 Plans of Other Local Municipalities in Middlesex County

Strategic plans for the other local municipalities within Middlesex County, are listed by municipality:

- Municipality of Southwest Middlesex:
 - Strategic Plan (2018)
 - Official Plan (2019)
- Municipality of North Middlesex:
 - Asset Management Plan (2021)
 - Official Plan (2018)
- Township of Adelaide-Metcalf:
 - Asset Management Plan (2022)

PHASE 1: NEEDS AND OPPORTUNITIES

- Strategic Plan (2015)
- Official Plan (2021)
- Township of Strathroy-Caradoc:
 - Transportation Master Plan (2022)
 - Official Plan (2018)
- Township of Lucan Biddulph:
 - Strategic Plan (2020)
 - Official Plan (2015)
- Municipality of Thames Centre:
 - Strategic Plan (2020)
 - Official Plan (2020)

The strategic plans of the adjacent municipalities share several core goals with the Middlesex Centre strategic plans, including supporting growth while maintaining rural heritage and character. For example, the Township of Lucan Biddulph expects 80% of new residents to settle in the village of Lucan, with a goal of directing those new residents to areas that already have municipal water and sewage systems. The Township of Adelaide-Metcalf specifies that they are a rural municipality and outlines what it does to support that identity while promoting growth.

The Strathroy-Caradoc Transportation Master Plan highlighted its inter-community transit pilot project with funding by MTO, running service between London and Sarnia. The service runs through Komoka in Middlesex Centre, connecting it to London, Sarnia, Strathroy and Mount Brydges, and is operated through Voyago, a private contractor. The Strathroy-Caradoc Transportation Master Plan also discusses the potential to partner with adjacent municipalities as it establishes transit in Strathroy to help share the costs.

4.5 Policies and Initiatives of the City of London

Reflecting the strong influence of and interconnectivity with the adjacent City of London, this section outlines policies and plans in the City that may have an impact on Middlesex Centre transportation.

4.5.1 Transportation Plans and Policies

Mobility Master Plan (estimated completion 2024)

The City of London embarked on developing its *London Mobility Master Plan* (MMP) in 2023 with Arcadis, with the plan anticipated to be completed in 2024. The MMP will supersede the City's current TMP (SmartMoves, below) to reflect the City's new long-range priorities, such as its climate action and equity objectives, as they pertain to transportation and mobility. Building on the City's Official Plan (the London Plan, 2022) and the Climate Emergency Action Plan (2022) (both described in Section 4.5.2 below), the MMP emphasizes the need to move from traditional conceptions of transportation alone, to more comprehensive, integrated and future-oriented conceptions of mobility, wherein the daily, multimodal needs to users across the socioeconomic, age and ability spectrum are met.

With both Middlesex Centre and the City of London in the process of developing new Transportation/Mobility Master Plans there arise key opportunities for collaborative cross-jurisdictional transportation plans, such as transit expansion and active transportation network plans, among other initiatives.

SmartMoves: A New Mobility Transportation Master Plan (2013)

A New Mobility Transportation Master Plan for London: SmartMoves 2030 was published in 2013 and is the City of London's current transportation master plan.

The plan outlines goals of trying to grow transit ridership and active transportation. One of the key elements of the plan to improve transit is the plan for Bus Rapid Transit routes. The plan includes two main routes one running east-west and the other running north-south. The north-south route terminates at Masonville Mall at Richmond St and Fanshawe Park Rd, and the east-west route terminates at Oakridge Mall on Oxford St. However, the two "legs" of the Bus Rapid Transit Plan closest to Middlesex Centre, the north and west legs, have faced strong community opposition and are not carried forward.

The plan also includes a network of arterial roads around the City, to help keep traffic moving, e.g. widening of Wonderland Road. However, this plan is also being reconsidered in the development of the MMP.

City of London Cycling Master Plan (2016)

The City of London's cycling plan highlights promoting touring routes that provide access to rural areas and municipalities surrounding the City of London. The plan

PHASE 1: NEEDS AND OPPORTUNITIES

shows several proposed cycling routes extending into Middlesex Centre to the north and west of the City of London.

The plan identifies six policy trends: complete streets, cycling on sidewalks, e-bikes, risk management and liability, cycling in new development areas, and accessibility.

4.5.2 Other Plans and Policies

The London Plan (2016)

The London Plan (2016) is the Official Plan and the main policy document that outlines the future vision for the City of London. The Plan defines a wide range of strategies, plans and policies that will contribute to the creation of vibrant, healthy, safe and fulfilling neighbourhoods, attractive and viable mobility alternatives, and affordable housing that is accessible to those who need it. Mobility is one of several core focus areas of the London Plan. Of the eight key strategies that comprise the Plan, the following three explicitly focus on transportation and mobility:

- **Connect London to the surrounding region:** by establishing better connections for motorists, transit riders and active transportation users getting to and from London through road, rail and trail network enhancements.
- **Build a mixed-use compact city:** by fostering strategic and intentional growth that focuses on high-intensity, mixed-use development along rapid transit corridors and by developing more high-quality public spaces that are conducive to pedestrian activity and active transportation.
- **Place a new emphasis on creating attractive mobility choices:** by supporting and promoting the uptake of sustainable mobility modes, such as walking, cycling and transit as a core component of safe, affordable and healthy community building.

Climate Emergency Action Plan (2022)

The City of London declared a Climate Emergency in 2019. As a result, in 2022, the City published the *Climate Emergency Action Plan* as part of its objective of fighting climate change and becoming one of Canada's greenest cities. The CEAP is guided by three core goals: achieving net-zero emissions by 2050; increasing resilience to climate change impacts; and bringing everyone along. The CEAP

PHASE 1: NEEDS AND OPPORTUNITIES

outlines actions across many sectors to meet these goals including numerous mobility and land use related initiatives. For Londoners, these actions mean:

- More walkable and complete neighbourhoods;
- More and better sustainable mobility options;
- Less reliance on automobiles to access destinations; and
- Reducing or eliminating fossil fuel use on all modes.

4.6 Policies and Initiatives of Adjacent First Nations

The Chippewas of the Thames First Nation *Comprehensive Community Plan* (2012-2022) outlines infrastructure goals and strategies. A transportation issue noted in the plan is the lack of a public transportation service to connect people to community facilities, events and employment opportunities. As part of the goal to upgrade and develop basic community infrastructure, the plan suggests initiating discussions with a non-profit transportation company.

A community plan is currently being developed for Oneida Nation of the Thames.

There is no existing or in development plan for Munsee-Delaware Nation.

4.7 Climate Change Considerations

Climate change is a long-term shift in weather conditions identified by changes in temperature, precipitation, winds, and other indicators. Climate change can involve both changes in average conditions and changes in variability, including, for example, extreme events¹².

The Government of Canada notes that human activity is the main cause of climate change, and that carbon dioxide emissions are the primary cause of human-induced climate change. Transportation represents a very significant component of Canada's greenhouse gasses (GHGs), especially carbon dioxide (about 24% in

¹² Government of Canada. Causes of Climate Change. <<https://www.canada.ca/en/environment-climate-change/services/climate-change/causes.html>> Accessed June 023

PHASE 1: NEEDS AND OPPORTUNITIES

2020)¹³, with the majority of those emissions relating to road transportation—personal transportation vehicles and trucks.

The **Middlesex-London Health Unit** has identified climate change as a potentially significant hazard to residents, concluding that health risks from climate change are growing for people in Middlesex County and London¹⁴.

With climate change attributed to accelerating the frequency of extreme weather events including extreme heat, extreme cold and severe storms, Middlesex Centre should be prepared and plan for a resilient transportation system and stormwater management system that can withstand flooding, heatwaves, extreme precipitation events, ice storms and more.

The natural heritage system in Middlesex Centre is an important asset to protect in helping to respond to climate change from both an adaptation and mitigation perspective: it helps to manage storm water impacts and flooding, and acts as a “carbon sink” to reduce greenhouse gas emissions¹⁵. The continued safeguarding of these areas, as well as agricultural lands, will help support the environmental, economic and social health of Middlesex Centre into the future.

¹³ Government of Canada. Greenhouse gas sources and sinks in Canada: executive summary 2022. <<https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/sources-sinks-executive-summary-2022.html#toc6>>

¹⁴ Middlesex-London Health Unit (2014). *Assessment of Vulnerability to the Health Impacts of Climate Change in Middlesex-London*.

¹⁵ WSP (2020). *Middlesex Centre Official Plan Review – Natural Heritage & Hazards*.

5. TMP Vision and Goals

Development of the Middlesex Centre TMP is guided by the strategic framework, the foundation of which are a future transportation Vision and Goals.

In later study phases, the Vision and Goals guide the development or assessment of TMP recommendations – such as infrastructure projects, services and policies –ensuring that the recommendations reflect the values of Middlesex Centre residents and are responsive to their needs.

The Vision and Goals were informed by the existing priorities and values outlined in other Middlesex Centre plans and policies (Section 4.3)—as well as current best practices in transportation master planning. They were also revised based on inputs received during the study’s public and stakeholder engagement.

5.1 Transportation Vision

The Vision states the desired future state of Middlesex Centre as it relates to its transportation system:

Transportation networks and services will provide the connectivity needed to move people and goods within, to and from our community safely, reliably and efficiently, while supporting a strong quality of life for Middlesex Centre residents, reducing negative environmental impacts, and exercising Municipal fiscal responsibility.

A draft version of the Vision was presented to the public and stakeholders during the first round of study engagement, where it generally received positive support. The final Vision was refined, as presented above, in response to the feedback collected. Input received is summarized in the *Survey Summary* report.

Recommendations identified in later phases of TMP development will help progress toward achieving the Vision.

5.2 Transportation Goals

The TMP's Transportation Goals represent a set of desired outcomes of the TMP that build toward the Vision. The Goals are used to identify and assess potential transportation recommendations in TMP development.

It is important that the Goals align with what the residents and stakeholders in Middlesex Centre want the transportation system to be. A draft version of the Goals was presented to the public and stakeholders as part of the study's first round of public consultation. Overall, the Goals received strong support from members of the public. In response to the feedback received, the Goals were slightly revised based on feedback received in the first round of engagement.

Since the draft Goals were shared with the public, the Goals have been categorized into two types:

- **Overarching Goals:** these represent goals that cut across and influence all TMP recommendations:
 - **Goal 1:** Sensitive to local character and quality of life
 - **Goal 2:** Protects the natural environment
 - **Goal 3:** Exercises fiscal responsibility
- **Mobility-Oriented Goals:** these address key areas of transportation or mobility:
 - **Goal 4:** Provides safe and efficient connectivity
 - **Goal 5:** Promotes healthy local mobility
 - **Goal 6:** Supports local industry.

These Goals are outlined further below. Potential objectives under each Goal are also included to inform Phase 2 of TMP development.

5.2.1 Overarching Goals



Goal 1: Sensitive to Local Character and Quality of Life: Provides transportation solutions that reduce the negative impacts of transportation on local rural communities and urban centres, settlements and hamlets.

Potential objectives:

- Transportation solutions reduce negative impacts of traffic, e.g. safety issues, noise, vibration, road dust
- Through traffic and heavy vehicle traffic are directed to use appropriate routes
- Infrastructure is sensitive to rural/small town character where appropriate, e.g. night-sky street lighting



Goal 2: Protects the Natural Environment: Minimizes disruption of local natural habitats, waterways, agricultural land and natural heritage features, and reduces non-renewable energy use for and pollutants arising from transportation.

Potential objectives:

- Reduced fossil fuel/non-renewable energy use for transportation infrastructure and operations (e.g. increased electric vehicle charging opportunities)
- Reduced anthropogenic pollutants produced by transportation
- Reduced disruption of agricultural lands, waterways, habitats and natural heritage features
- Increased safety for wildlife



Goal 3: Exercises Fiscal Responsibility: Represents cost-effective Municipal spending on infrastructure and operations and takes advantage of partnership opportunities and external grants.

Potential objectives:

- Cost-effective use of Municipal resources
- Transportation spending within Municipal budget limitations
- Increased leveraging of Municipal funds through partnerships and access to federal and provincial grants

5.2.2 Mobility-Oriented Goals



Goal 4: Provides Safe and Efficient Connectivity: Supports safe, efficient and dependable personal (passenger) travel between, to and from Middlesex Centre communities and activities.

Potential objectives:

- Safe and convenient connections to higher-order travel routes (highways, arterials)
- Safe and reliable municipal/local road operations
- Expansion/support of alternative longer-distance travel options: cycling, passenger transit
- Increased safety for travellers by all modes
- Reduced impacts on vehicular travel times
- Increased resilience to climate change impacts



Goal 5: Promotes Healthy Local Mobility: Provides safe, accessible and convenient mobility options to connect between daily activities within local communities.

Potential objectives:

- Safe, comfortable and accessible active transportation (walking, wheeling, cycling) facilities
- Provision/support of passenger transit or other options for local vehicular travel



Goal 6: Supports Local Industry: Supports prosperity in Middlesex Centre by meeting the transportation needs of agriculture and other local industries, such as efficiently moving goods to and from markets.

Potential objectives:

- Efficient heavy vehicle connectivity to County roads and Provincial highways
- Support of movement of agricultural equipment
- Support of local businesses through adequate parking provision and pedestrian access

6. Travel Patterns and Trends

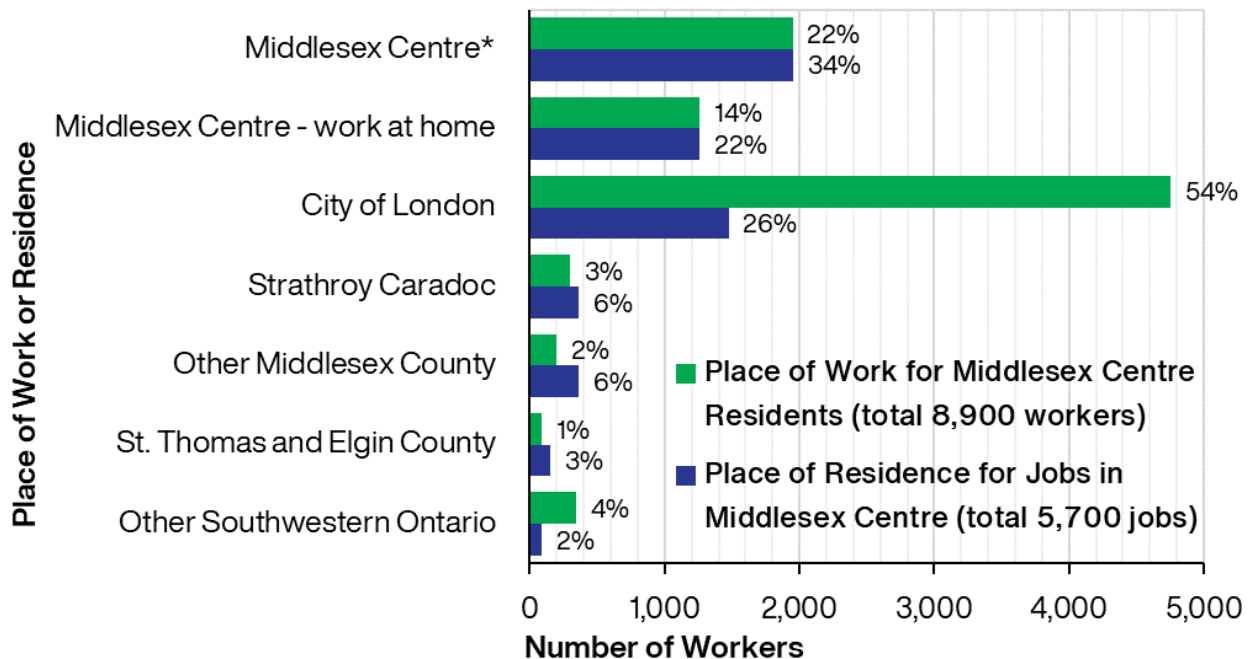
Understanding the travel and mobility patterns in Middlesex Centre will support the development of transportation infrastructure and services to serve these patterns efficiently and safely via appropriate transportation options.

In Middlesex Centre, everyday trips often involve travel outside of the Municipality, though shorter local trips are also needed. The TMP will work to build networks and services that support local travel as well as travel between municipalities.

6.1 Commuting Flows

Commuting is one of the most frequent reasons for daily travel. Analysis of Census Journey-to-Work data provides an understanding of commuting flows for Middlesex Centre residents and workers. This is shown in Exhibit 6.1 for 2016, and in Exhibit 6.2 for 2021. These exhibits include all workers, including those without a fixed place-of-work and those who work from home.

Exhibit 6.1: Journey-to-Work Summary for Middlesex Centre, 2016



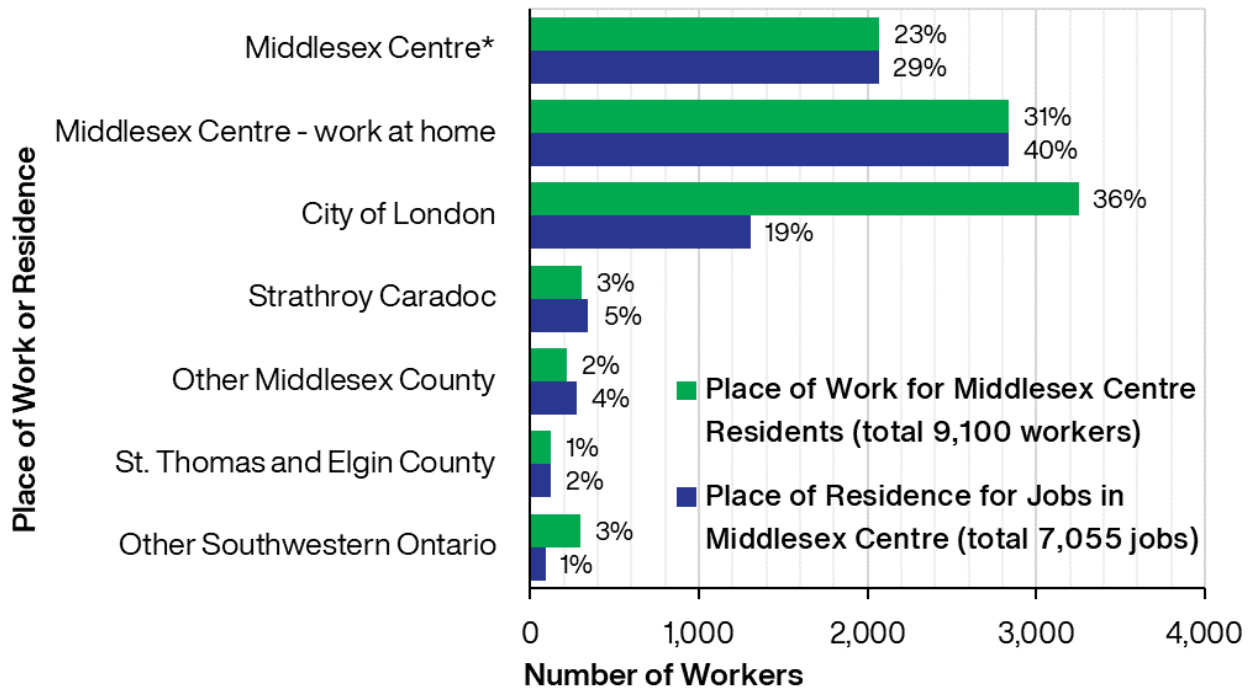
(percentages are of total workers or residents in Middlesex Centre)

* Includes both fixed place of work and no fixed place of work

Data Source: 2016 Census Journey-to-Work and Place-of-Work Status data.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 6.2: Journey-to-Work Summary for Middlesex Centre, 2021



(percentages are of total workers or residents in Middlesex Centre)

* Includes both fixed place of work and no fixed place of work

Data Source: 2021 Census Journey-to-Work and Place-of-Work Status data.

As can be seen in Exhibit 6.1, in 2016, a majority – 54% – of workers residing in Middlesex Centre commuted to London, 22% worked in workplaces in Middlesex Centre, 14% worked at home, and 10% commuted elsewhere.

By 2021, a more than doubling of work-from-home workers (from 1,260 in 2016 to 2,840 in 2021) as a result of the response to Covid-19 lead to changes in workplace distributions. Exhibit 6.2 shows that commuting to City of London dropped to 36% of the Middlesex Centre labour force. The majority of Middlesex Centre residents now worked in Middlesex Centre, 23% at workplaces and 31% working from home. The remaining 11% of workers worked elsewhere.

A number of Covid-19 mandates and precautions were still in place in 2021 and many workers had not yet returned to the office at least part of the time. The longer-term distribution of workplace commuting will likely involve a work-from-home proportion somewhere between those seen in 2016 and 2021.

As far as working within Middlesex Centre, of the 7,055 jobs in Middlesex Centre in 2021, 40% are represented Middlesex Centre residents working from home,

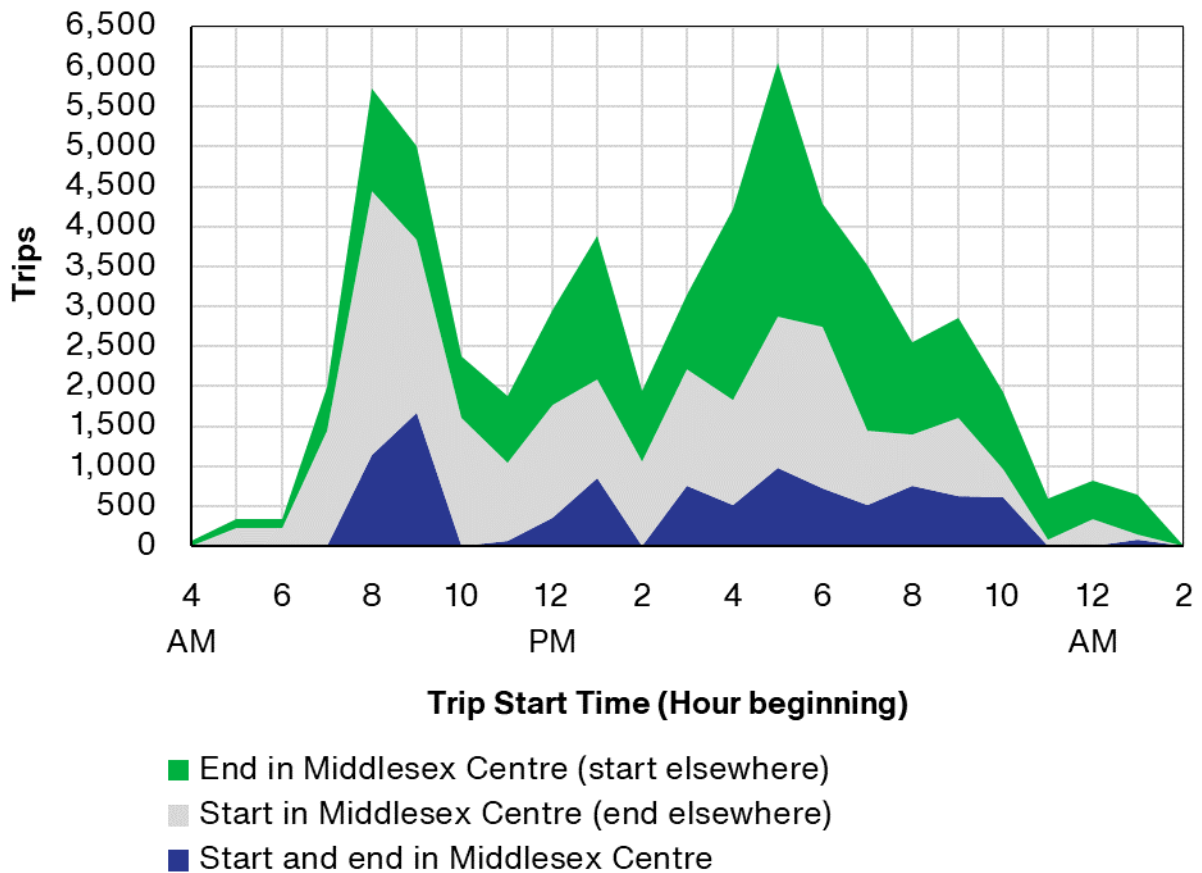
PHASE 1: NEEDS AND OPPORTUNITIES

29% are workers who live and work in Middlesex Centre, and a further 19% were residents in London, and 10% commute to the Municipality from elsewhere.

6.2 Trips by Time of Day

Travel characteristics in Middlesex Centre also vary considerably by time of day. Exhibit 6.3 shows the distribution of trip start times for all weekday trips to, from and within Middlesex Centre in 2016, based on the City of London’s 2016 Household Travel Survey.

Exhibit 6.3: Trip Start Time for All Weekday Trips To, From and Within Middlesex Centre, 2016



Data Source: 2016 City of London Household Travel Survey. Off-peak trips may be under-represented.

In the morning peak period, the focus is on commuting trips, often to workplaces outside of Middlesex Centre, while the afternoon sees more of a focus on returning to Middlesex Centre, together with travel for other purposes. In total,

PHASE 1: NEEDS AND OPPORTUNITIES

there were nearly 57,000 weekday trips in Middlesex Centre on a typical 2016 weekday. The Municipality also sees high levels of travel through traffic, neither starting nor ending in Middlesex Centre.

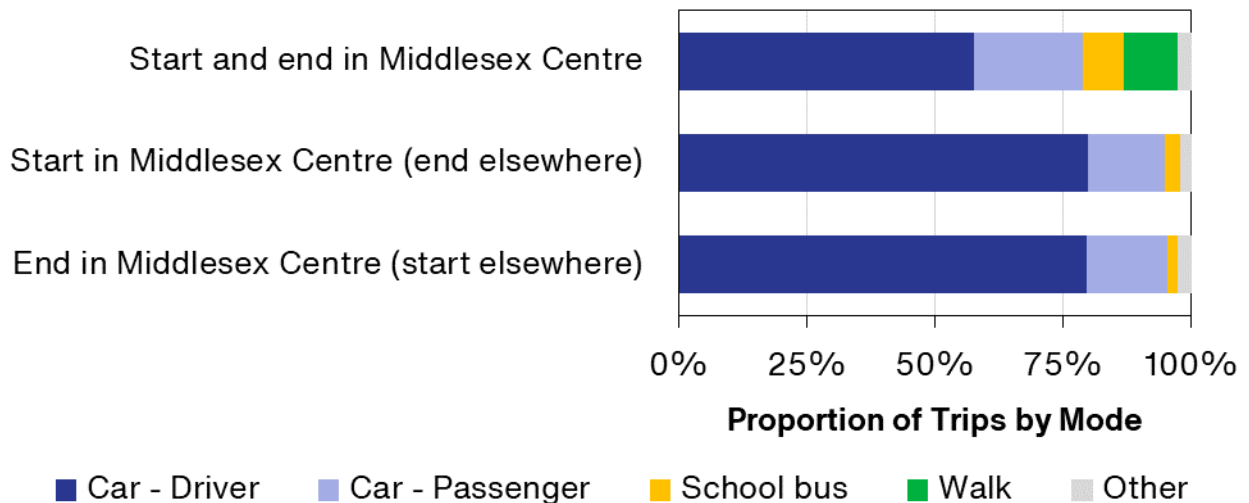
6.3 Travel Mode Shares

Exhibit 6.4 shows the mode share for all weekday trips to, from and within Middlesex Centre. The way residents of Middlesex Centre travel is limited to available options, so travel by car continues to be the main way to get around. Meanwhile, youth typically travel to and from schools by school bus.

For local, shorter trips, walking becomes more of an option—10% of weekday trips within Middlesex Centre are made by walking. It is also easier to share a car ride with others for local trips—local weekday trips have 1.36 people per car on average, while longer-distance trips have 1.19 on average.

The TMP will strive to make it easier to travel by non-auto modes as appropriate, e.g. walking, cycling, public transit, carpooling and ridesharing.

Exhibit 6.4: Travel Mode Share for Weekday Person-Trips



Data Source: 2016 City of London Household Travel Survey

Note: “Other” mode responses did not contain trips made by cycling or public transit modes, but did include taxi, Uber and motorcycle trips, as well as unspecified other modes.

6.4 Other Trends Affecting Transportation

6.4.1 New Residents

As Middlesex Centre, as well as much of Canada, faces an aging population distribution due to declining birth rates (discussed previously in Section 3.5.2), much of the anticipated increase in population in Middlesex Centre is anticipated to come from immigration from other countries, as well as migration from other parts of Canada, such as urban residents seeking the more peaceful and potentially more affordable small-town atmosphere offered by Middlesex Centre. These new residents will often come from areas with transportation alternatives to driving in place, such as transit systems, cycling lanes, and connected sidewalk or trail systems. They may more readily seek out or accept the use of alternative travel modes for transportation, should they be provided in Middlesex Centre, than long-time residents who may be less familiar with using alternative modes.

Migrant seasonal agricultural workers, while potentially less prevalent in Middlesex Centre than in other agricultural municipalities, are another population often in need of alternative transportation modes, as they do not tend to have a personal automobile available for their use while temporarily residing in the municipality.

6.4.2 New and Emerging Technologies

Emerging transportation technologies are important to consider in developing a future-looking transportation system.

Technological advancements that support electric, shared, automated and connected transportation options are reshaping mobility. By developing infrastructure and policies that support the adoption of technologies that are appropriate for the needs and context of Middlesex Centre, the Municipality can better take advantage of the benefits these technologies may bring.

Electric Vehicles

The Government of Canada has set emission reduction targets of cutting emissions by 40% below 2005 levels by 2030. To be on track toward the goal of achieving net-zero emissions by 2050, in June 2021, the Government of Canada set a mandatory target that all new light-duty cars and passenger truck sales are to be “Zero-Emission Vehicles (ZEVs)” by 2035. ZEVs are vehicles that do not produce polluting exhaust, and include fully battery electric, plug-in hybrid

PHASE 1: NEEDS AND OPPORTUNITIES

electric, and hydrogen fuel-cell electric vehicles, as opposed to fully gasoline or diesel-powered vehicles^{16, 17}. Currently, the most notable among these are different forms of electric vehicles (EVs). In 2021, ZEVs comprised 5.1% of motor vehicles registrations, including hybrid electric vehicles, battery electric vehicles and plug-in electric vehicles¹⁸.

In view of the increasing market share of EVs, there is an increasing demand for charging infrastructure to support their use. Exhibit 6.5 shows public EV charging stations currently available in and around Middlesex Centre by EV charging level: Level 1, Level 2 and Level 3, where Level 1 represents the fastest charging process and strongest electrical current requirements.

The map shows that, at present, the only public EV charging station in Middlesex Centre is in Komoka-Kilworth. Public EV charging stations can be found in nearby London, Mount Brydges, and Strathroy.

Connected and Automated Vehicles

The prospect of connected and automated vehicles (CAVs), while providing potential benefits in terms of efficiency and safety, also creates significant uncertainty in terms of the types of technologies that will ultimately be implemented, the timing of uptake of the technology, the infrastructure they would require, and the regulatory framework required for their use.

The Transportation Association of Canada (TAC) has prepared a primer to assist municipalities in preparing for the advent of connected and automated vehicles¹⁹.

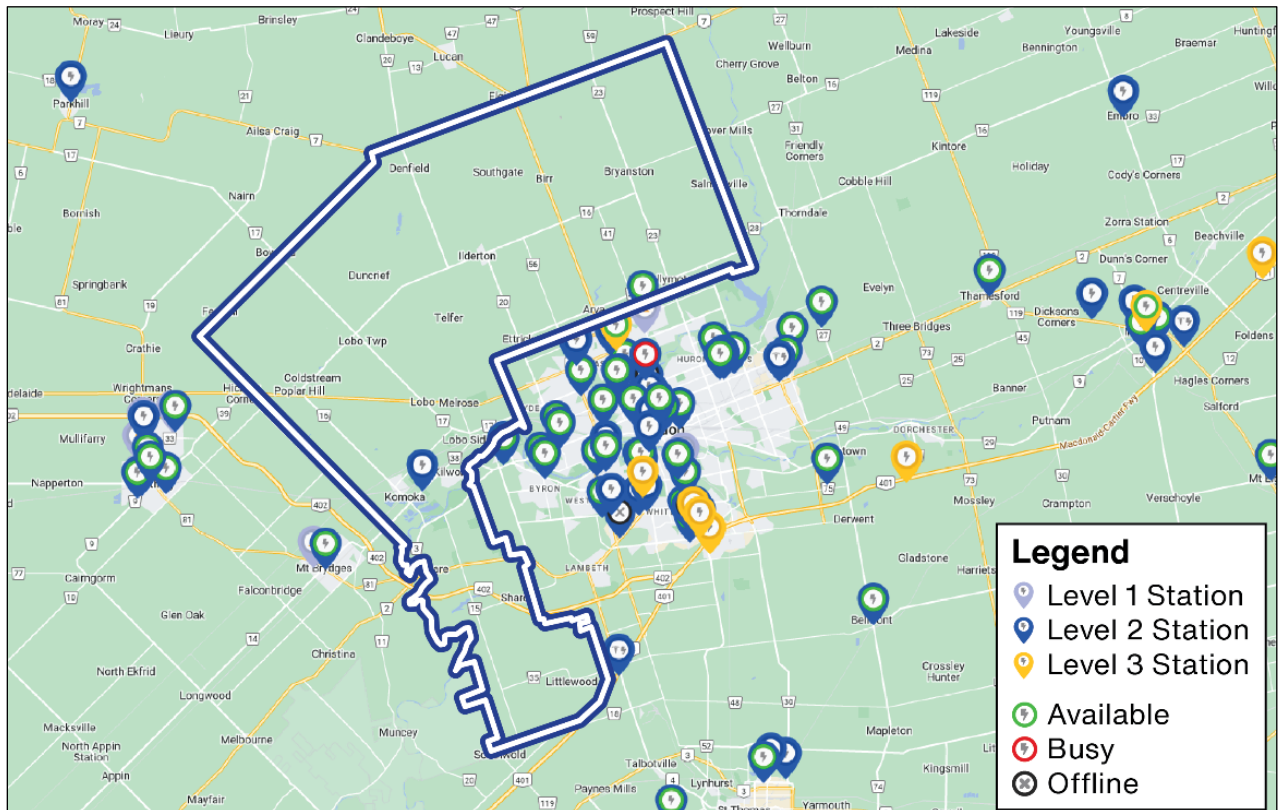
¹⁶ Government of Canada, Natural Resources Canada (2022). “Zero Emission Vehicle Awareness Initiative” <<https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/electric-and-alternative-fuel-infrastructure/zero-emission-vehicle-awareness-initiative/22209>>

¹⁷ “*Transport Canada News* (2021, June 29). Building a green economy: Government of Canada to require 100% of car and passenger truck sales be zero-emission by 2035 in Canada” in <<https://www.canada.ca/en/transport-canada/news/2021/06/building-a-green-economy-government-of-canada-to-require-100-of-car-and-passenger-truck-sales-be-zero-emission-by-2035-in-canada.html>>.

¹⁸ Statistics Canada. “Automotive Statistics” <<https://www.statcan.gc.ca/en/topics-start/automotive>> Accessed May 2023

¹⁹ Transportation Association of Canada (2022, January). *Connected and Automated Vehicles: A Primer for Canadian Municipalities*.

Exhibit 6.5: Locations of Electric Vehicle Charging Stations in Middlesex Centre and Vicinity



Map Source: ChargeHub (2023), Middlesex Centre boundary added.

The Society of Automotive Engineers (SAE International) has outlined six levels of increasing vehicle automation:

- Level 0: No driving automation;
- Level 1: Driver assistance;
- Level 2: Partial driving automation;
- Level 3: Conditional driving automation;
- Level 4: High Driving automation; and
- Level 5: Full driving automation.

Level 1 technologies are available in most passenger cars, and Levels 2 and 3 are starting to become available, but there is considerable uncertainty about when and how the higher levels of automation could be implemented; these could be years to decades away.

PHASE 1: NEEDS AND OPPORTUNITIES

Meanwhile, connected vehicles (CVs) use wireless communications technologies to communicate with their surroundings, and potentially with its occupants with other vehicles, with traffic control infrastructure, and the cloud (data).

The TAC primer notes the roles and responsibilities for different levels of governments regarding CAVs. The role of municipal governments are as follows (from Table 3 of the report):

- Enacting and enforcing bylaws;
- Advocating for and accommodating testing;
- Enforcing traffic laws and regulations;
- Adapting infrastructure to support AV/CV deployment Managing passenger transportation (including public transit, taxis and ridesharing services);
- Managing and creating new logistics for traffic control and parking enforcement; and
- Public education on motor vehicle safety issues.

TAC notes that municipalities can undertake a range of actions to prepare for CAVs, from **low-cost** actions such as simply monitoring CAV impacts in other countries leading in CAV development or establishing interdepartmental working groups to assess the potential impact of CAVs, to **medium-cost** options such as supporting staff skills training, to **higher-cost** actions such as undertaking pilot deployments of vehicles such as automated shuttles.

7. Middlesex Centre Roads and Vehicular Travel

The road network within Middlesex Centre provides the critical infrastructure to move people and goods via cars, trucks, buses, agricultural vehicles, bicycles and more. Maintaining efficient and safe connections within and between communities, to adjacent municipalities and especially London, as well as to major traffic generators will be important aspects of a TMP that is responsive to the needs of all residents and visitors of Middlesex Centre.

This section focuses on roads under Middlesex Centre jurisdiction but provides context about roads under other jurisdictions as well. It also describes the roadway infrastructure, road classifications, volume/capacity analysis, planned road

PHASE 1: NEEDS AND OPPORTUNITIES

improvements, and collision analysis, and also summarizes needs and opportunities related to roads and vehicular travel.

7.1 Road Network Jurisdiction

A map of the road network in Middlesex Centre is shown in Exhibit 7.1. Roads within Middlesex Centre are owned and managed by the Province, the County or the Municipality. Together with the Provincial highway network and County roads, the Municipality's local road network provides the necessary infrastructure to move people and goods via cars, trucks, buses, agricultural vehicles, and bicycles.

7.1.1 Provincial Highways

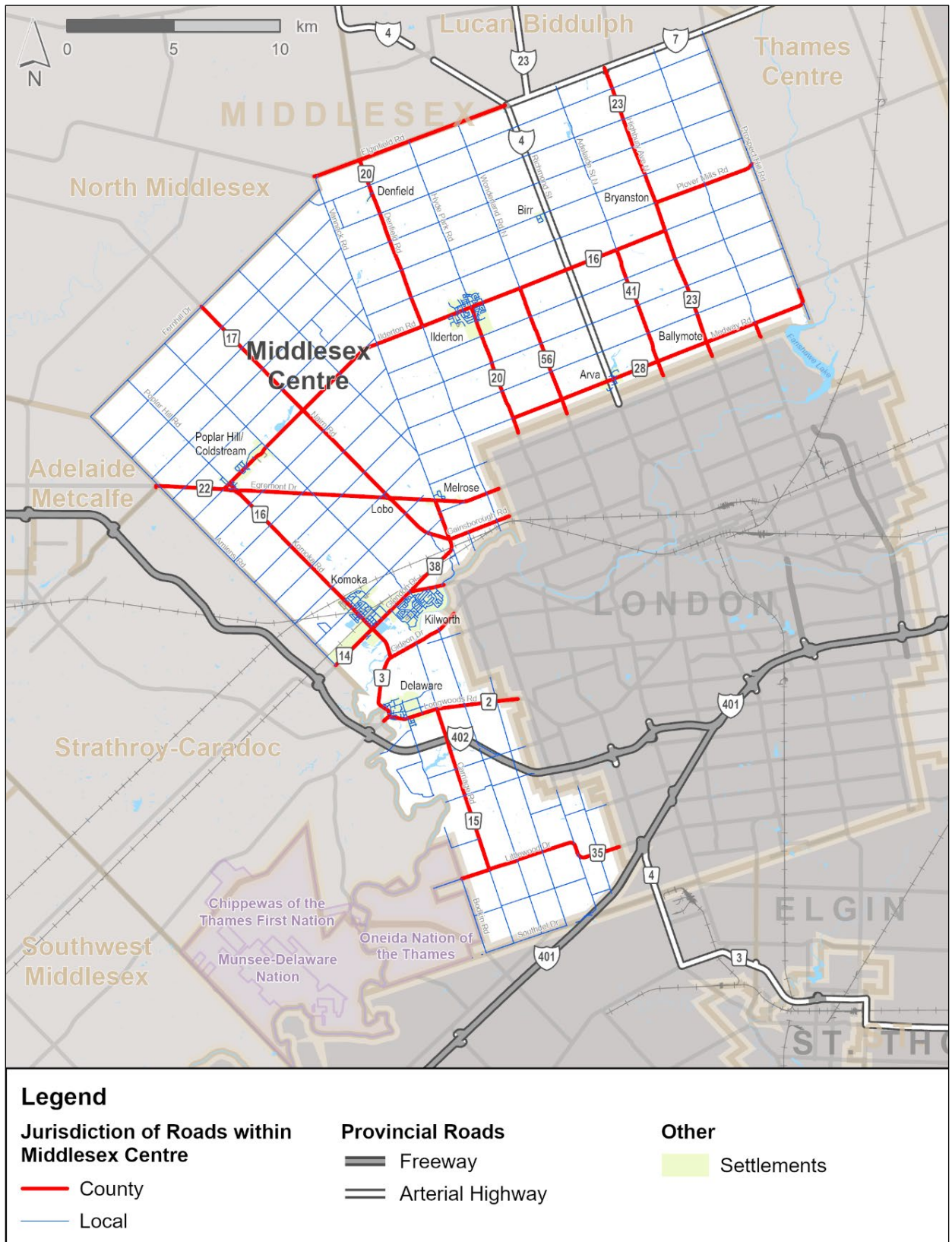
The Ministry of Transportation Ontario (MTO) is responsible for four highways in Middlesex Centre: Highways 402, 401, 4 and 7.

Highway 402 is a major multi-lane controlled-access freeway and important trade corridor, starting at Highway 401 just east of Middlesex Centre in London, and continuing as far as the Canada-US border in Sarnia/Port Huron. There is currently no direct access to Highway 402 within Middlesex Centre, as interchanges lie just beyond municipal boundaries with access points to the west at Longwoods Road and at Glendon Drive in Strathroy-Caradoc and east at Colonel Talbot Road in London. Since April 2022, the speed limit of Highway 402 west of London has been permanently increased to 110 km/h. When highway drivers acclimatize to these speeds, it can be difficult for them to slow down to municipal roadway speeds once they exit the highway. This is especially true of drivers exiting onto Longwoods Road (CR 2) in Delaware and Glendon Drive (CR 14).

Highway 401 a major multi-lane controlled-access freeway and a crucial Canadian international trade corridor. It forms a portion of the Municipality's southern boundary. The highway continues west as far as the Canada-US border in Windsor/Detroit, and connects east to London, Woodstock and beyond. Access points to Highway 401 lie just outside Middlesex Centre; interchanges are located west at Union Road in Southwold and east at Colonel Talbot Road in London.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.1: Road Network in Middlesex Centre



PHASE 1: NEEDS AND OPPORTUNITIES

Highway 4 is a north-south arterial highway continuing from the City of London as Richmond Street (a City of London roadway) to the south, through Middlesex Centre including the community settlement of Arva and the hamlet of Birr, and connecting to other smaller settlements to the north in Lucan Biddulph and beyond. Signalized intersections for traffic control are located at Medway Road (CR 28), Ilderton Road (CR 16) and Highway 7. Provision for pedestrian crossings is included as part of CR 28 and CR 16 traffic signalization, but not at Highway 7.

Highway 7 is an east-west arterial highway that serves as part of Middlesex Centre's northern boundary with Lucan Biddulph, beginning at Highway 4 and continuing easterly to connect with provincial Highway 23, Stratford and onward to the Region of Waterloo.

Modifications and encroachments to these arterial highways (e.g. new entrances, upgrading of entrances, location of buildings, signage, etc.) are subject to the approval of MTO.

Provincial Carpool Lots

Carpooling, or ridesharing, is an established and effective transportation demand management measure that can help reduce single-occupancy vehicles trips. Carpool lots are locations where pre-arranged carpool partners can meet to travel together in one vehicle, while parking the other vehicles at the lot for the duration of the trip.

The Province of Ontario, through MTO, owns and operates carpool lots at selected 400-series highways interchanges. The following MTO carpool lots are located near Middlesex Centre:

- **Strathroy Caradoc:** West of Delaware at Longwoods Road adjacent to the Highway 402 interchange (30 parking spaces); and
- **London:** Veterans Memorial Parkway and Bradley Avenue, north of Highway 401 (56 parking spaces).

The TMP will assess the need for additional commuter/carpool parking in Middlesex Centre to improve carpooling as a viable choice for commuters.

7.1.2 County Roads

Middlesex County is responsible for a network of roads that primarily serve a broader connectivity function, providing inter-municipal service and connecting settlement areas throughout the County.

PHASE 1: NEEDS AND OPPORTUNITIES

Per the Official Plan of Middlesex County, Middlesex County roads are classified as Collector Roads, Arterials Roads or Four-Lane Arterial Roads. Within Middlesex Centre, County Roads 14, 22, 23 and 56 are identified as Four-Lane Arterials Roads, given the potential for future widening—currently these roadways have two-lane cross-sections. The Four-Lane Arterials are termed “Major Arterials” for purposes of the Middlesex Centre TMP. These roadways comprise some of the County’s busiest roads.

County Road 22 is a former Provincial highway, serving as the primary connection between Sarnia and London before the completion of Highway 402; it was transferred to County jurisdiction in 1998.

Development that would inhibit traffic movement along County roads is discouraged, while agricultural, industrial, commercial and open space uses are deemed appropriate land uses along arterial County roads.

Given the high priority placed on County roads for moving traffic through the County, County road speed limits are as high as 90 km/h in rural areas, reduced to 70 km/h in urban areas, or as low as 50 km/h in some busier urban areas such as Ilderton. Where posted speeds are high, County roads become increasingly unsafe for vulnerable road users, especially cyclists and pedestrians, to use without protected infrastructure for them.

Balancing the through-traffic and overall mobility function of County roads with the place-making, mixed use development and multi-modal goals of Village Centres—lands designated within *Urban Settlement Areas* and *Community Settlement Areas* as per the Middlesex Centre Official Plan—they pass through will require coordination between the Municipality and the County.

7.1.3 Middlesex Centre Roads

The remaining public roads not under Provincial or County jurisdiction are under the jurisdiction of the Municipality of Middlesex Centre.

7.2 Road Infrastructure Characteristics

The Municipality of Middlesex Centre is responsible for the following road infrastructure²⁰:

- 606 kilometres of local municipal roadways;
- 51 bridges with a span of 3 metres or more;
- 99 culverts, 56 of which have a diameter of 3 metres or more; and
- 1,876 streetlights on municipal poles or hydro poles.

With the exception of streetlights, these infrastructure elements are mapped in Exhibit 7.2, which also indicates the road surface type for Middlesex Centre roads.

7.2.1 Road Surface Type

Over half of the municipality's roadways (55%) are hard-surfaced (i.e. bituminous), and the rest (45%) are soft-surfaced (i.e. granular). The following road surface types are used in Middlesex Centre²¹:

- **Granular (272 km total):** Soft-top roadways made of gravel, stone and other loose aggregate. Granular roads require an increased stopping distance and have visibility issues associated with dust on newly resurfaced roads. Regular maintenance is required to mitigate issues such as rutting, loose gravel and potholes. Granular roads are not preferred for segments with higher average annual daily traffic volumes due to the increased maintenance costs related to road wear from higher vehicle volumes.
- **Low-Class Bituminous (230 km total):** Hard-top surface treated roads – emulsified or liquid asphalt and select aggregate over a granular base or existing surface. Surface treated roads may require resurfacing every 5 to 7 years and are better suited for roads with low to moderate traffic volumes.
- **High-Class Bituminous (105 km total):** Hard-top roads made from hot mix asphalt. Paved roads provide the highest-quality road surface and lowest maintenance cost, but highest up-front costs, requiring resurfacing every 15 to 25 years. Generally, high class bituminous can be considered for roads with higher traffic volumes.

²⁰ Watson & Associates Economists Ltd. (2021). *Asset Management Plan*.

²¹ Descriptions from Middlesex Centre (2023). *Road Needs Study*.

PHASE 1: NEEDS AND OPPORTUNITIES

The Municipality has a gravel-to-hard surface conversion policy to upgrade local roads when warranted.

7.2.2 Seasonal Load Limits

Local municipal roads subject to seasonal load limits per By-Law 2018-092 (amended May 2023) due to softer road conditions during the spring thaw are shown in Exhibit 7.3. Seasonal load restrictions are implemented throughout March and April to protect roads from damage as a result of snowmelt, thawing ice and rainfall saturating the road base material.

7.2.3 Bridge Structures

Bridge structures, typically crossing waterways, are another important component of the road network in Middlesex Centre. Structures in Middlesex Centre can be grouped into two categories: culverts and bridges. For the purposes of identifying and classifying structures in the Municipality's inventory, the definitions of bridge and culvert as per the Ontario Structure Inspection Manual (OSIM)²² are as follows:

- **Bridge:** A structure that provides a roadway deck or walkway for the passage of vehicles, pedestrians, or cyclists across an obstruction, gap or facility and that is greater than 3 metres in span.
- **Culvert:** A structure that forms an opening through soil for the purposes of channeling water beneath a roadway and provide access to pedestrian, rail or vehicular traffic through the embankment.

The many waterways in Middlesex Centre necessitate many bridge structures. The Municipality is responsible for 51 bridges and 99 culverts (27 of which have a total span between 2 and 3 metres). The Municipality undertakes a bridge assessment study every two years to prioritize structural improvements, address identified safety concerns and predict future costs for these 126 structures. The findings of the latest study are detailed in Municipality's Structures Inspection and Assessment report (2023), outlining recommended completion of improvement types, including repairs or replacement, over a 5-year period, 6–10 year period, and 11–20 year period.

²² Ontario Structure Inspection Manual (OSIM, 2008). Ontario Ministry of Transportation. Policy, Planning & Standards Division Engineering Standards Branch, Bridge Office.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.2: Roadway Infrastructure and Road Surface Type

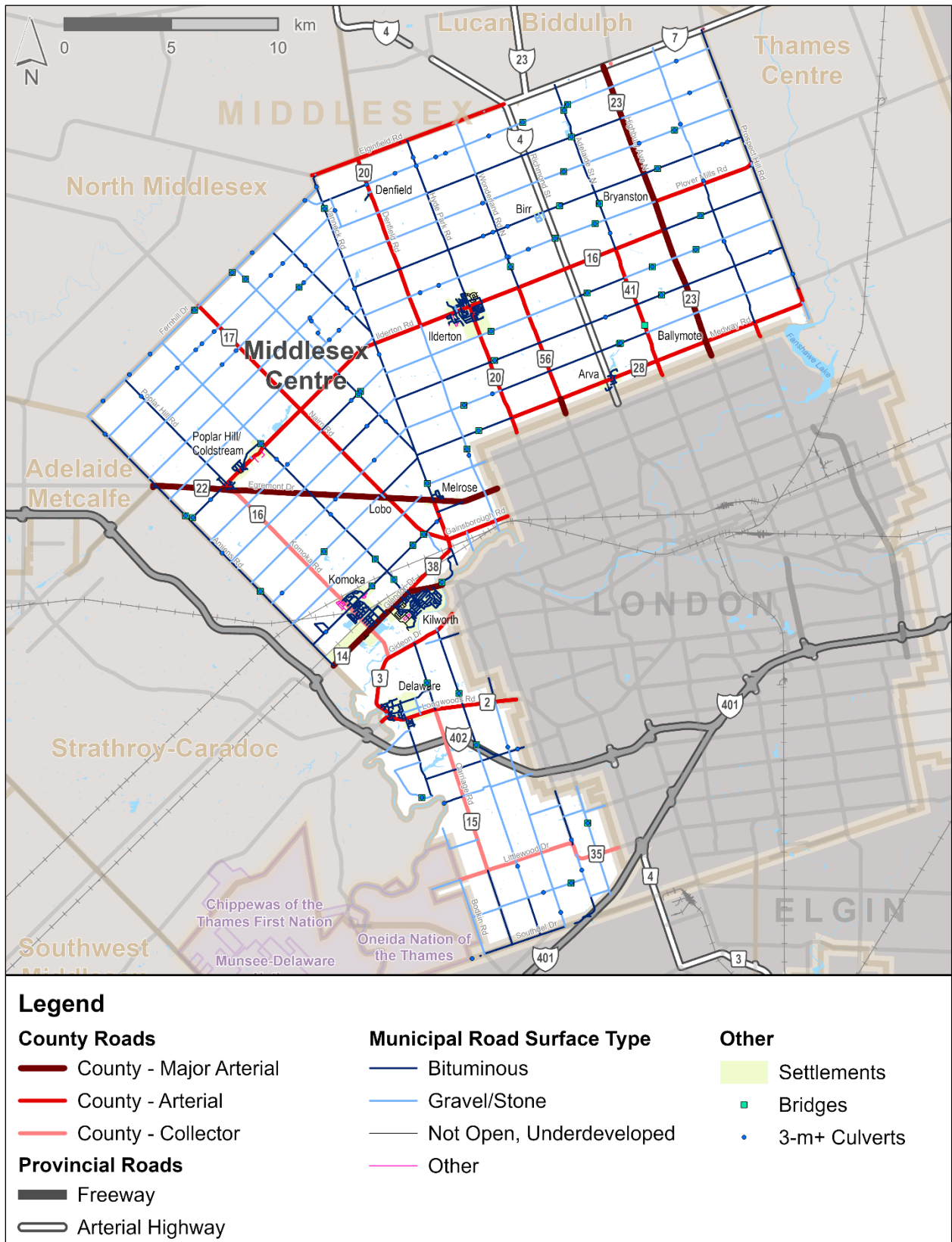
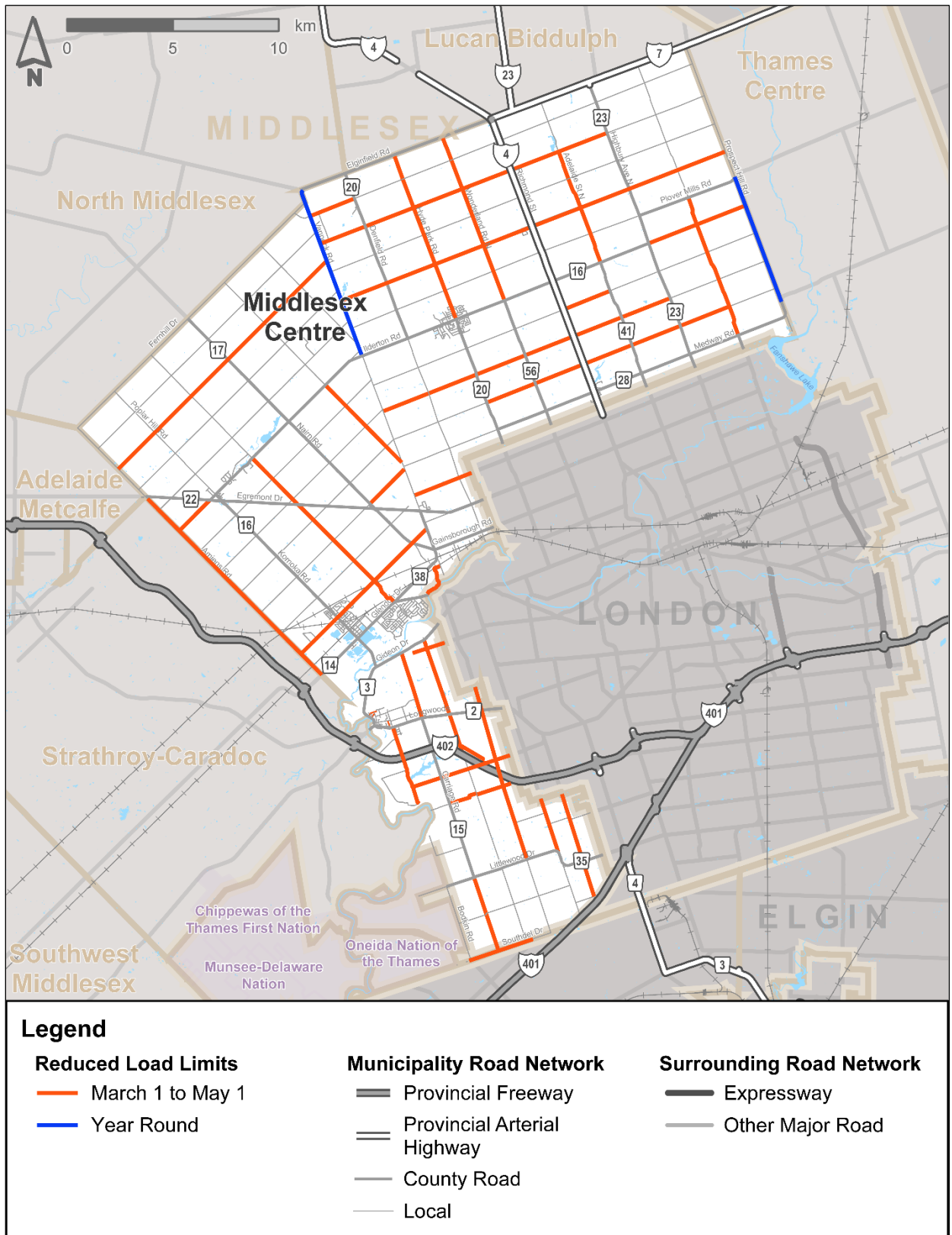


Exhibit 7.3: Reduced Load Limits in Middlesex Centre



PHASE 1: NEEDS AND OPPORTUNITIES

7.2.4 Municipal Parking

Having sufficient parking supply supports local businesses as well as the needs of residents and visitors. While municipal parking is understood to be in sufficient supply in Middlesex Centre, additional supply may be needed as the Municipality's population and employment grows.

The Municipality currently operates one municipal off-street parking lot, located in Ilderton and providing parking at no-cost to users.

The Municipality's Official Plan policy 5.3.2 states that parking will be provided within Village Centres in the context of new development.

As part of the TMP public opinion survey conducted as part of Public Information Centre 1, a continued parking supply was a top priority among survey participants to support local businesses and manage goods movement in Middlesex Centre.

7.3 Traffic Volumes and Road Capacity Analysis

The Municipality of Middlesex Centre conducts traffic counts throughout the road network annually, covering a selection of road segments each year.

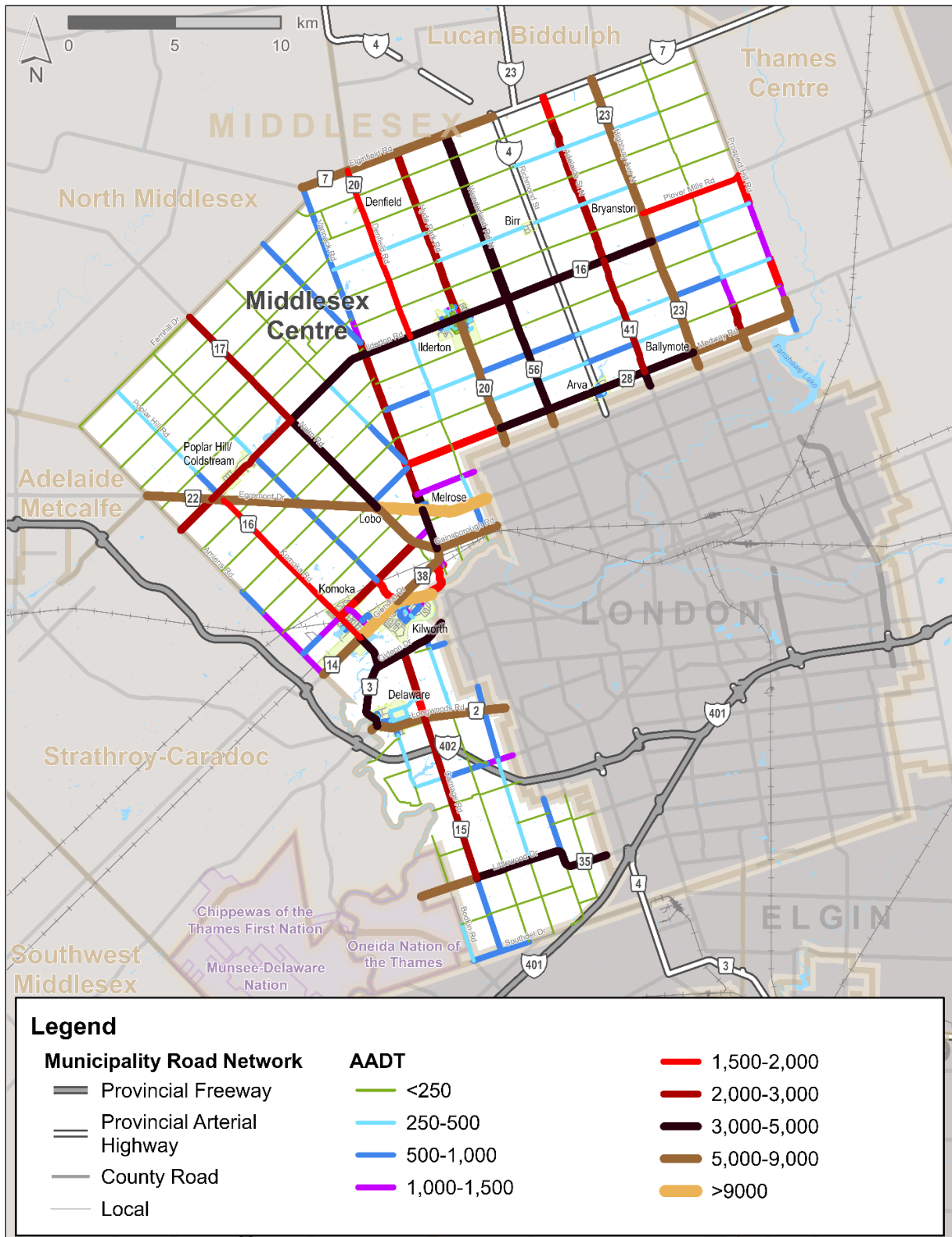
Exhibit 7.4 summarizes the average annual daily traffic (AADT) counts for roads under Middlesex Centre and County jurisdiction. For Middlesex Centre roads, the plot shows the latest typical volumes that seem to best represent partial post-pandemic recovery where available (2022/2021), otherwise the most recent pre-pandemic conditions are used, also avoiding anomalously low or high counts for any given road section. Traffic counts are shown for all rural roads as well as the higher-volume roads within settlement areas. County road counts are shown for year 2021.

The highest traffic volumes in Middlesex Centre are on County Roads that connect directly to London, in particular:

- Glendon Drive (CR 14): 14,500 AADT;
- Egremont Drive (CR 22): 11,400 from London to CR 17 (6,300-7,600 elsewhere); and
- Highbury Avenue (CR 23): 8,800 AADT.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.4: Average Annual Daily Traffic: Municipal and County Road Network, 2021



Note: Counts for individual segments are from 2022/2021 as available, or pre-pandemic.

PHASE 1: NEEDS AND OPPORTUNITIES

The higher-volumes roads under the jurisdiction of the Municipality of Middlesex Centre are as follows:

- **Jefferies Road** in Komoka-Kilworth between Glendon Drive (CR 14) and Peregrine Avenue: 6,500 AADT;
- **Kilworth Park Drive** in Komoka-Kilworth between Glendon Drive (CR 14) and Birchcrest Drive: 3,400 AADT;
- **Wonderland Road** north of Ilderton Road (CR 16) and Wonderland Road (CR 56): 3,200 to 3,600 AADT;
- **Vanneck Road** between Egremont Drive (CR 22) and Sunningdale Rd West: 3,600 AADT; and between Sunningdale Rd West and Ilderton Road (CR 16): 2,100 to 2,700 AADT;
- **Hyde Park Road** north of Ilderton Road (CR 16) and Hyde Park Road (CR 20): 2,000 to 2,800 AADT;
- **Adelaide Street North** between Ilderton Road (CR 16)/Adelaide Street North (CR 41) and Thirteen Mile Road: 2,000-2,700 AADT
- **Oxbow Drive** between Nairn Road (CR 17) and Komoka Road (CR 16): 2,200 to 2,500; and
- **Carriage Road** between Gideon Drive (CR 3) and Longwoods Road (CR 2): 2,100 AADT.
- **Clarke Road** between Medway Road (CR 28) and Eight Mile Road: 2,100.

Roadway capacity issues are typically analyzed for a “design-hour volume” in the peak travel direction – typically a morning or afternoon commuting peak period in the peak commuting direction. Because only full-day was available for analysis, summed across both travel directions, design-hour volumes for each road segment were estimated as 10% of the AADT volume, with 60% of traffic moving in the peak direction at that time.

Roadway capacities for County and Middlesex Centre roads based on whether the road is in a rural area vs. within a settlement area, and road surface type, as summarized in Exhibit 7.5. (Roadway travel speeds also typically factor into capacity analysis, but speeds were not available on a segment-by-segment basis for the network, with rural vs. settlement area designations used as a reasonable proxy.)

PHASE 1: NEEDS AND OPPORTUNITIES**Exhibit 7.5: Estimated Hourly Lane Capacities by Road Type**

Road Type	Rural	Urban/ Settlement Area
County Road – Major Arterial	1,100	900
County Road – Arterial	1,000	800
County Road – Collector	900	700
Local – Bituminous	750	500
Local – Gravel/Stone	500	350

The analysis in this section relates to roadway link capacity analysis only; note that the efficiency of intersection operations can also affect capacity of the roadway but is not taken into consideration in this analysis.

The resulting volume-to-capacity estimates for 2021 are shown in Exhibit 7.6. The only roadways approaching capacity issues (volume-to-capacity of 0.75 to 1.0) at this time, though not yet at critical levels (over 1.0), are County Roads:

- **Glendon Drive (CR 14)** between the London boundary and Komoka Road (CR 16): A planned widening of Glendon Drive to four lanes from Old River Drive (Section 7.5.1) will address this concern, though the planned widening does not extend as far east as the London boundary, as this would involve coordination with the City of London and costly widening of the Oxford Street bridge over the Thames River; and
- **Egremont Drive (CR 22)** through the hamlets of Melrose and Lobo.

Traffic counts were also estimated for the horizon year of 2046, with traffic growth rates for each road segment informed by on population and employment forecasts within Middlesex Centre and for adjacent municipalities (Sections 3.5 and 3.6), and applied as follows:

- 164% - County/major roads within Ilderton and CR 20 south of Ilderton;
- 251% - County/major roads in Komoka-Kilworth;
- 150% - County/major roads in Arva;
- 297% - CR2, CR3 and arterial and main rural roads in Delaware area as far south as and including Sharon Dr. (related to Delaware growth);
- 130% - Other north-south roads north of London (average of Other Middlesex Centre, Other Middlesex County, London and Huron growth); and
- 130% - all other roads in Middlesex Centre.

PHASE 1: NEEDS AND OPPORTUNITIES

The resulting volume-to-capacity ratio results are plotted in Exhibit 7.7. These reflect a “do-nothing” scenario, with no changes to the road network in Middlesex Centre compared to current conditions.

By 2046, given strong anticipated population growth in Komoka-Kilworth and strong employment growth in the Delaware area, the following County road connections are anticipated to approach critical levels:

- **Glendon Drive (CR 14)** between the London boundary and Highway 402 (the planned widening of Glendon Drive will address this anticipated deficiency, with the exception of east of Old River Road, as noted above); and
- **Longwoods Road (CR 2)** between Highway 402 and City of London, through Delaware: The planned 130 hectares of employment in the Delaware area will draw considerable traffic that will most likely use Longwoods Road (CR 2) to access nearby markets as well as connecting to Highway 402 interchanges in adjacent municipalities. A new interchange on Highway 402 at Carriage Road would distribute some of this traffic onto Highway 402 much more directly, thereby reducing traffic on the County and Municipal road network.

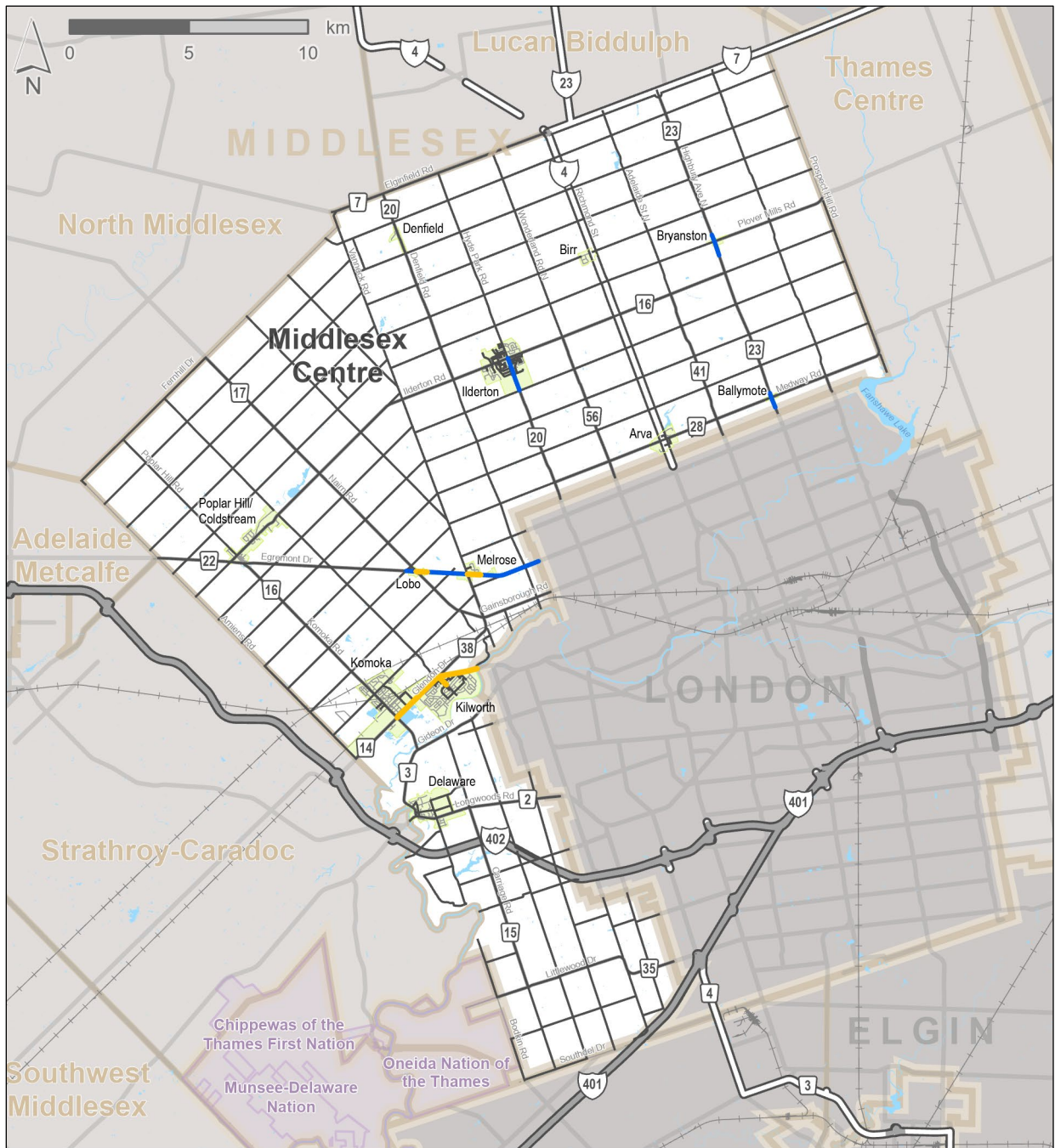
Additional County roads are also seen to be approaching capacity issues by 2046 – attention to ensuring efficient traffic operations at intersections along these roads into the future may sufficiently mitigate these effects.

Among Middlesex Centre roads, **Jefferies Road** in Komoka-Kilworth could also reach critical volume-to-capacity levels by 2046. This will depend on the specifics of development southwest of Komoka-Kilworth in terms of the roadway network and how traffic is distributed within it, as well as intersection operations at roads connecting to Glendon Drive, so that all traffic in the neighbourhood does not unduly favour Jefferies Road, which is currently the only signalized intersection with Glendon Drive (CR 14) between Komoka Road (CR 16) and the City of London.

Sections of **Oxbow Drive**, on the north side of Komoka-Kilworth, is also anticipated to approach capacity constraints by 2046.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.6: Estimated Design-Hour Volume-to-Capacity Ratios, 2021



Legend

2021 Design-Hour Volume-to-Capacity Ratio

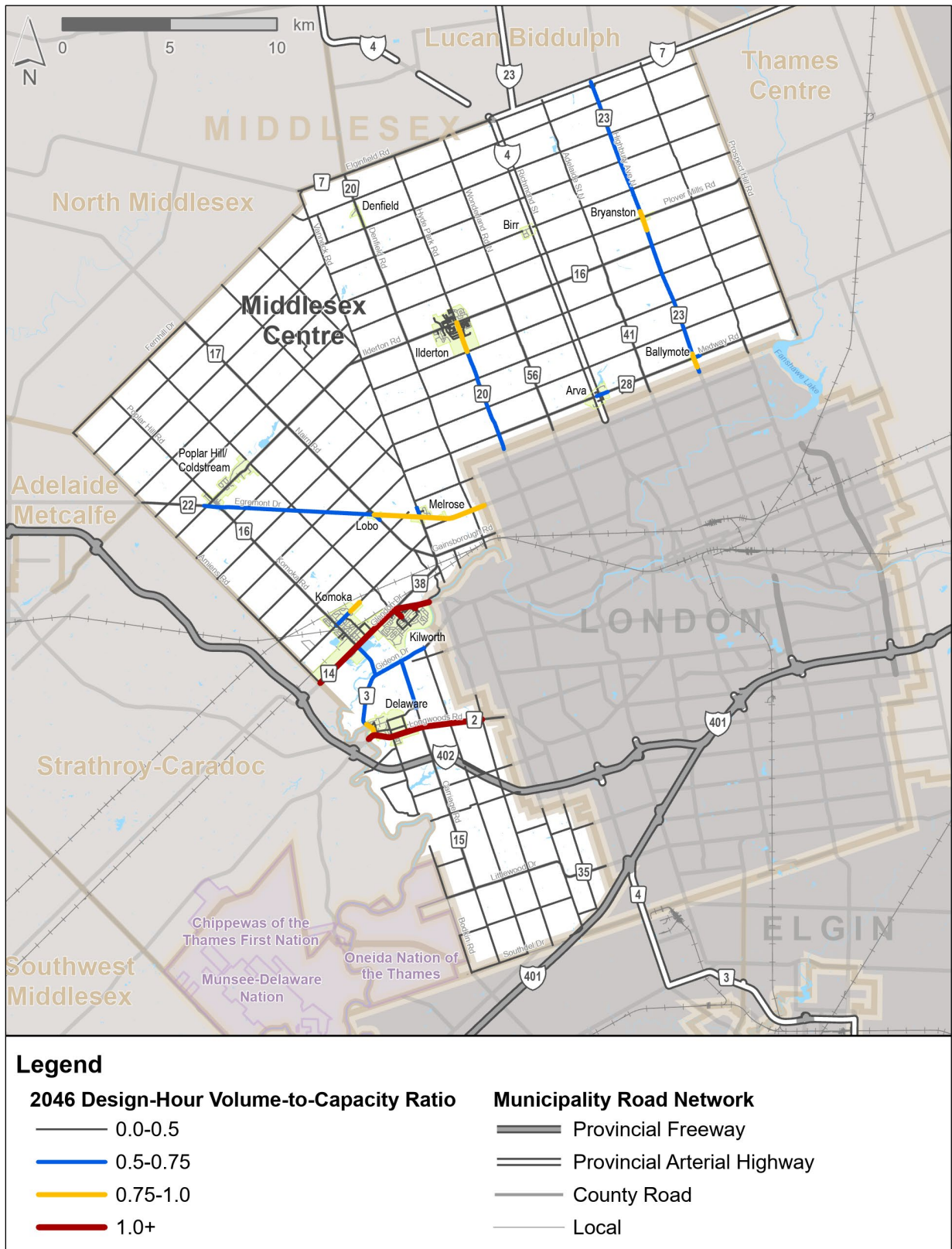
- 0.0-0.5
- 0.5-0.75
- 0.75-1.0
- 1.0+

Municipality Road Network

- Provincial Freeway
- Provincial Arterial Highway
- County Road
- Local

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.7: Design-Hour Volume-to-Capacity Ratios, 2046



7.4 Road Classifications

7.4.1 Functional Road Classification

A functional road classification system establishes a hierarchy of roads based on each road segment's context and the degree to which the segment prioritizes traffic movement vs. land access needs. Reducing access to properties along roads whose function puts a higher priority on traffic movement reduces traffic conflicts and increases safety.

As outlined in the County's *Official Plan*, local municipal roadways serve to move traffic from County roads to abutting properties, and can be further classified as Arterial, Collector or Local Roads. Regardless of further classification, the function of local municipal roads is to carry low volumes of traffic and provide property access.

The functional classification of County roads per the County's Official Plan was shown previously in Exhibit 7.2.

All Middlesex Centre roads are currently classified as Local Roads in the Middlesex Centre Official Plan, with the exception of the Komoka-Kilworth Secondary Plan, which identifies future and proposed collector roads.

Developing and applying a functional road classification framework that more clearly stratifies the travel vs. local access function for individual Middlesex Centre road segments could provide clarity and direction for the Municipality in a range of decision-making.

“Complete Streets”

“Complete Streets” are roads that are built with the needs of all road users in mind – people who walk, use mobility aids, cycle, take transit, use a personal automobile, and carry commercial goods or support essential services.

A Complete Streets lens can be applied to the road classification framework to outline guidance on how facilities for different modes could be provided for, including walking, cycling, transit and other uses in addition to vehicles, depending on the context of the roadway.

Note that a contextual lens is required in adopting a Complete Streets approach to road network planning. Not all roads will consist of the same roadway elements, and not all road users will be equally accommodated along each roadway. Each

PHASE 1: NEEDS AND OPPORTUNITIES

corridor must be evaluated both based on its local function and context as well as its role in the broader transportation system.

7.4.2 Rural, Semi-Urban and Rural Roads

Middlesex Centre currently also categorizes roads as rural roads, semi-urban roads and urban roads, based on the roadway's length, servicing and adjacent land use. This classification is used for establishing road design elements and related costs for reconstruction and rehabilitation.

This classification also would be used to identify the appropriate class of cycling facility, where provided, following *OTM Book 18 (2021)* guidelines.

As outlined by the *Municipality of Middlesex Centre Roads Needs Study* (Draft Report, 2023), the roadside environment for each of these road classes is described as follows:

- **Rural Roads:** Roadways in areas of sparse development, or where development is less than 50% of the frontage, including developed areas extending less than 300 metres on one or both sides, with no curb or gutter.
- **Semi-Urban Roads:** Roadways within areas where development exceeds 50% of the frontage for a minimum of 300 metres on one side, or 200 metres on both sides, with no curb and gutter, with or without storm or combination sewers, or for subdivisions where the lot frontages are 30 metres or greater.
- **Urban Roads:** Roadways with any of the following contexts:
 - Curbs and gutters on both sides, served with storm or combination sewers;
 - Curb and gutter on one side, served with storm or combination sewers, or reversed paved shoulders with, or served by, storm or combination sewers; and
 - Subdivisions with frontages less than 30 metres.

7.4.3 Minimum Municipal Service Classifications

Under the *Municipal Act, 2001*, the Province outlines standards of repair and maintenance for municipal roads, as per the “Minimum Maintenance Standards for Municipal Highways” through Ontario Regulation 239/02. All roads under the jurisdiction of a municipality in Ontario are classified as one of Classes 1 through 6 based on traffic levels and posted speed limits, as shown in Exhibit 7.8.

PHASE 1: NEEDS AND OPPORTUNITIES

The classification of Middlesex Centre roadways by Minimum Maintenance Class is shown in Exhibit 7.9.

Exhibit 7.8: Ontario Municipal Highway Classification for Road Maintenance

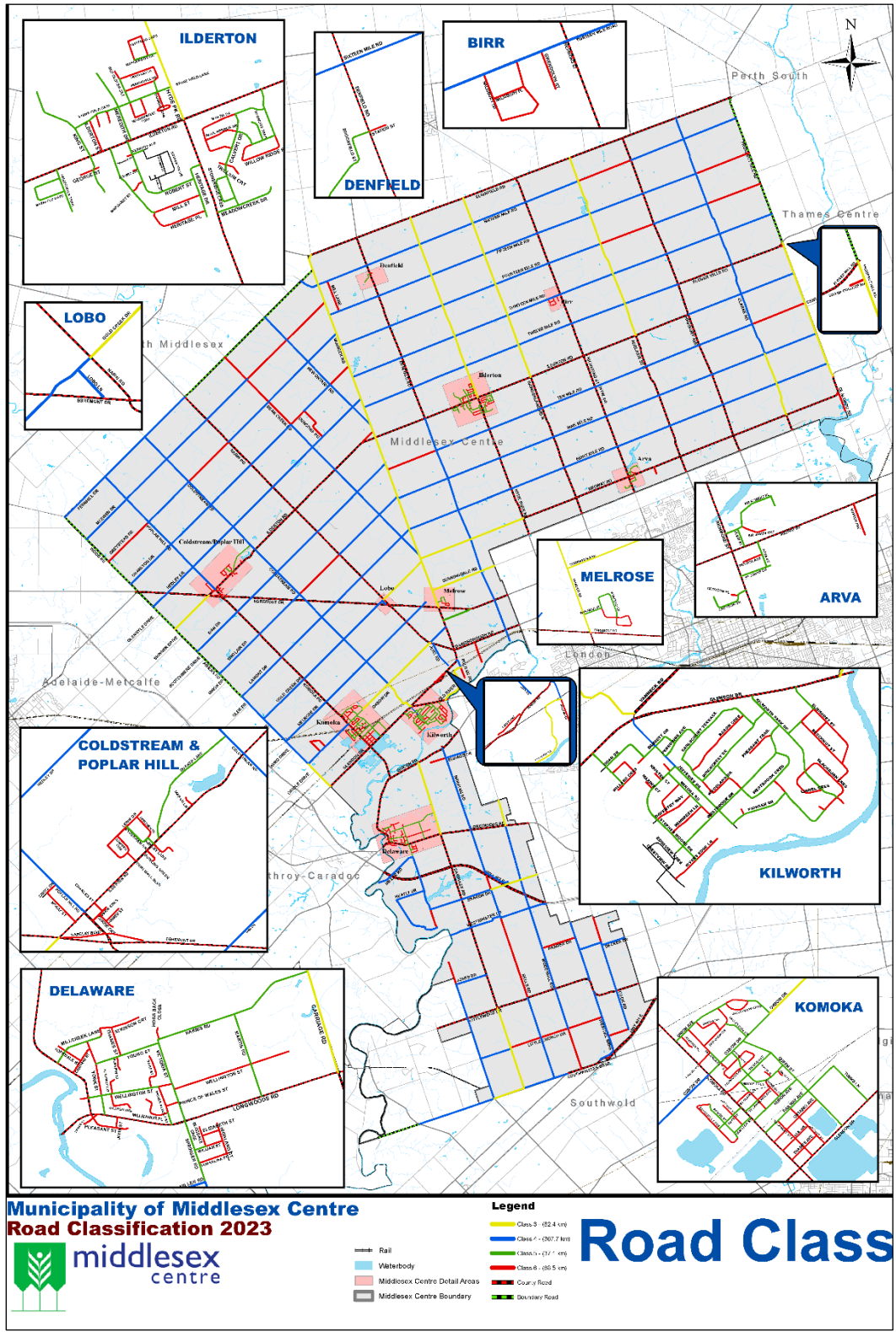
Average Annual Daily Traffic (number of motor vehicles)	Posted or Statutory Speed Limit (km/h)						
	91-100	81-90	71-80	61-70	51-60	41-50	1-40
53,000 or more	1	1	1	1	1	1	1
23,000 - 52,999	1	1	1	2	2	2	2
15,000 - 22,999	1	1	2	2	2	3	3
12,000 - 14,999	1	1	2	2	2	3	3
10,000 - 11,999	1	1	2	2	3	3	3
8,000 - 9,999	1	1	2	3	3	3	3
6,000 - 7,999	1	2	2	3	3	4	4
5,000 - 5,999	1	2	2	3	3	4	4
4,000 - 4,999	1	2	3	3	3	4	4
3,000 - 3,999	1	2	3	3	3	4	4
2,000 - 2,999	1	2	3	3	4	5	5
1,000 - 1,999	1	3	3	3	4	5	5
500 - 999	1	3	4	4	4	5	5
200 - 499	1	3	4	4	5	5	6
50 - 199	1	3	4	5	5	6	6
0 - 49	1	3	6	6	6	6	6

.Source: *Municipal Act, 2001*, Ontario Regulation 239/02, s. 1 (O. Reg. 366/18, s. 1(5)).

Note: Table cells for Classes 1 and 2 are shaded as there are no Highway Class 1 or Class 2 local municipal roadways in Middlesex Centre

Final Report
PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.9: Minimum Maintenance Standards Level of Service



Source: Municipality of Middlesex Centre (2023)

PHASE 1: NEEDS AND OPPORTUNITIES

As road segment characteristics change due to growth, changes in posted speeds, or network changes, the road segment's Minimum Maintenance classes are updated accordingly.

Winter maintenance standards for municipal highways, including standards for snow clearing in bicycle lanes, are outlined in Exhibit 7.10, while pothole maintenance standards are outlined in Exhibit 7.11.

Exhibit 7.10: Winter Minimum Maintenance Standards for Municipal Highways

Class	Snow Depth (cm)	Snow Clearing Time (Hours)	Bike Lanes Snow Clearing Time (Hours)	Ice Prevention (Hours)	Ice Clearing Time (Hours)
1	2.5	4	8	6	3
2	5	6	12	8	4
3	8	12	24	16	8
4	8	16	24	24	12
5	10	24	24	24	16

Source: Municipal Act, 2001, Ontario Regulation 239/02, s.3 and O. Reg. 366/8, s. 8

Exhibit 7.11: Pothole Minimum Maintenance Standards for Municipal Highways

Class	Paved			Non-Paved			Paved/Non-Paved Shoulder		
	Area (cm ²)	Depth (cm)	Time (days)	Area (cm ²)	Depth (cm)	Time (days)	Area (cm ²)	Depth (cm)	Time (days)
1	600	8	4	-	-	-	1,500	8	7
2	800	8	4	-	-	-	1,500	8	7
3	1,000	8	7	1,500	8	7	1,500	8	14
4	1,000	8	14	1,500	10	14	1,500	10	30
5	1,000	8	30	1,500	12	30	1,500	12	60

Source: Municipal Act, 2001, Ontario Regulation 239/02, s.6, Tables 1-3

7.5 Planned Road Improvements

This section summarizes future road expansions and improvements that are currently in various stages of planning or commitment. The Middlesex Centre TMP may make additional recommendations to the road network beyond those described below.

7.5.1 Municipal and County Road Improvement Plans

Identifying key municipal road projects is an important consideration for the TMP that aids the analysis of the future road network. The identification of future road works may also present opportunities to bundle active transportation infrastructure with road planning, design, operations and maintenance work.

Glendon Drive (County Road 14)

In partnership with the Municipality of Middlesex Centre, Middlesex County completed the Glendon Drive Environmental Assessment (EA) in 2018—a Class C Municipal Class Environmental Assessment—to undertake improvements to County Road 14 (Glendon Drive). The EA spanned Glendon Drive from the City of London boundary at the Thames River, to the Highway 402/Glendon Drive interchange. Recommended improvements include the following:

- Roadway widening:
 - Hwy 402 to west of Komoka Road: 2 lanes with centre passing lane
 - West of Komoka Road to Jefferies Road: widening to two lanes per direction, with centre median
 - Jefferies Road to east of Kilworth Park Drive: widening to two lanes per direction
- Sidewalk/path along Glendon Drive:
 - From Kilworth Park Drive to Vanneck/Jefferies Road: south side only
 - From Vanneck/Jefferies Road to west of Komoka Road: both sides
- Improved intersection operations, from west to east along Glendon Drive:
 - New signalized intersection and pedestrian crossing at Tunks Lane and Crestview Drive (future Kilworth Heights West subdivision access)
 - New roundabout at intersection with Komoka Road (currently signalized)

PHASE 1: NEEDS AND OPPORTUNITIES

- New traffic signalization at Kilworth Park Dr
- New westbound left-turn lane at Elmhurst St
- New roundabout at Vanneck Road (County Road 38) and Jefferies Drive (“Five Corners”, currently signalized); the south end of Coldstream Road would be made into a cul-de-sac, preventing access between Coldstream Road and Glendon Drive, and simplifying the intersection from five approaches to four and improving operations and safety
- New roadway and intersection alignment of Old River Road westward to improve sightlines and provide space for an eastbound left-turn lane and westbound right-turn taper
- New Springfield Way road (Coldstream Road realignment westward) with a south terminus at Kilworth Park Drive and Glendon Drive intersection, providing access to Coldstream Rd; and
- Restricted through traffic access from Vanneck Road to Pulham Road via a new emergency gate at Old River Road and Pulham Road, thereby reducing the through traffic using Old River Road to access Glendon Drive.

A conceptual drawing summarizing elements of the recommended Glendon Drive EA plan is shown in Exhibit 7.12. Detailed drawings are available at the County’s website²³. Detailed design of the roundabout at Glendon Drive, Vanneck Road and Jefferies Road—Glendon Drive Roundabout and Coldstream Road Realignment—is complete, with construction anticipated for completion in late 2023. Subsequent phases of construction for the remainder of the corridor are anticipated over multiple years.

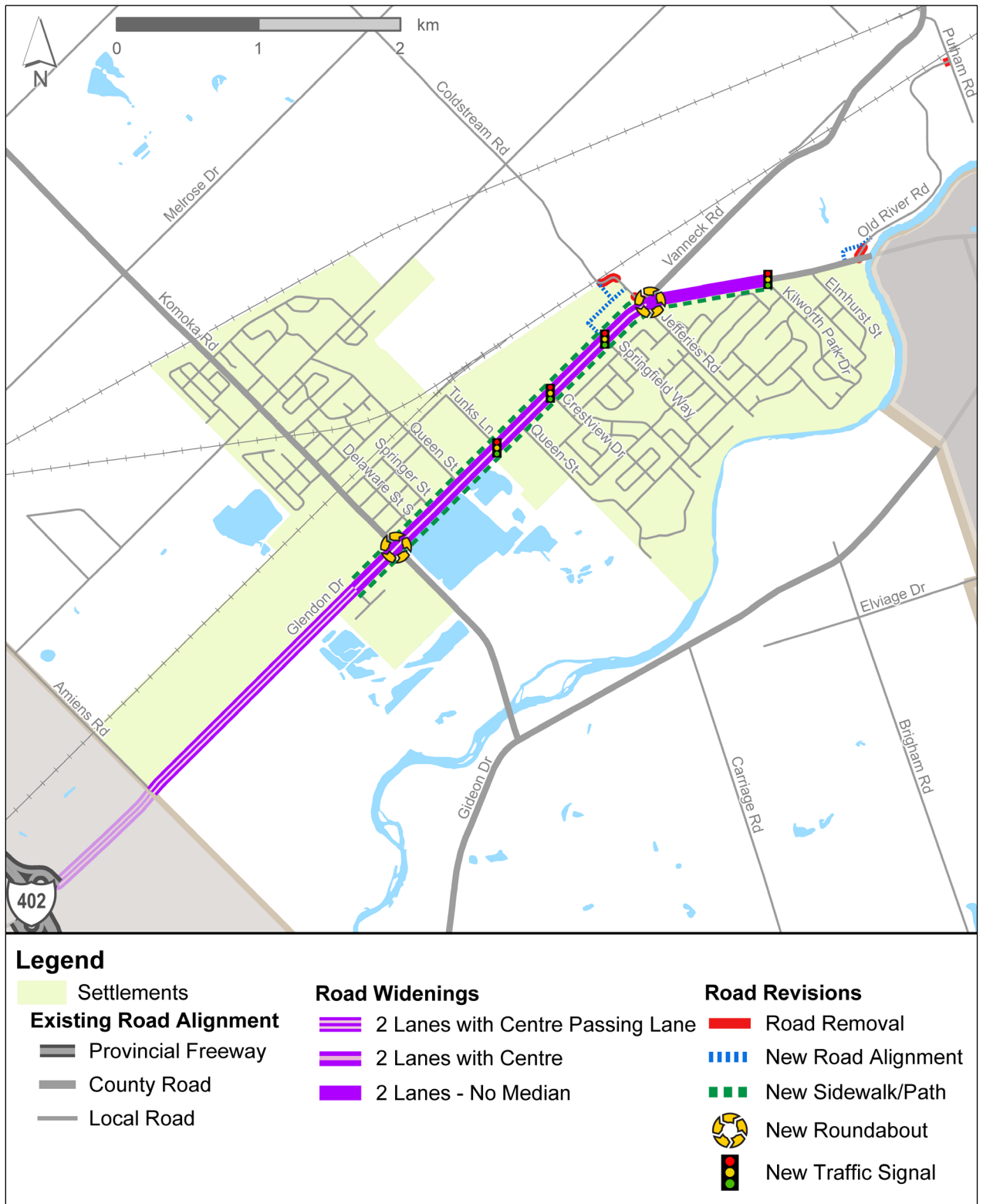
Input received from the City of London as part of Technical Advisory Committee Meeting 1 confirmed that the City does not currently have plans to widen Oxford Street West to four lanes, though this may arise as a need to address as the City develops its Mobility Master Plan. Potential future widening of Glendon Drive/Oxford Street West of Old River Road will need to be coordinated between Middlesex County, the Municipality of Middlesex Centre, and the City of London.

²³ Middlesex County (2019). Glendon Drive.

<<https://www.middlesex.ca/departments/roads/environmental-assessments/environmental-study-report-glendon-drive>> Accessed June 2023.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.12: Overview of Middlesex County's Glendon Drive Improvement Plan



7.5.2 Provincial Road Improvement Plans

As noted in Connecting the Southwest (Section 4.1.2), the Province plans to expand Highway 401 from four lanes to six lanes and add a concrete median from London to Tilbury. The Highways Program²⁴ indicates the project as an “Upcoming Expansion”, with widening of the highway as far west as 1.4 km west of Elgin County Road 20 (Union Road), i.e. west of Middlesex Centre.

This additional capacity will reduce the potential for traffic bypassing Highway 401 using County or municipal roads due to congestion on the highway.

7.6 Traffic Collision Analysis

To understand traffic collision characteristics in Middlesex Centre and to identify areas for potential road safety improvements, collision data along County and/or Municipality roads for the five-year period 2012 to 2016 were compiled by location, location type (mid-block vs. at an intersection), and by collision type, and analyzed. (More recent data did not include collision types for analysis.)

Exhibit 7.13 shows the distribution of collision types annually from 2012 to 2016 in Middlesex Centre.

Of the average of 117 collisions reported per year, the most prevalent were collisions involving deer and other animals at 40% of reported collisions, given the largely rural nature of the area, the prevalence of woodlots that are attractive to wildlife, etc. It may be possible to reduce the numbers of wildlife collisions at common wildlife collision locations by adding fencing, increasing the clear distance between woodlots and roadway, adding street lighting, or other means.

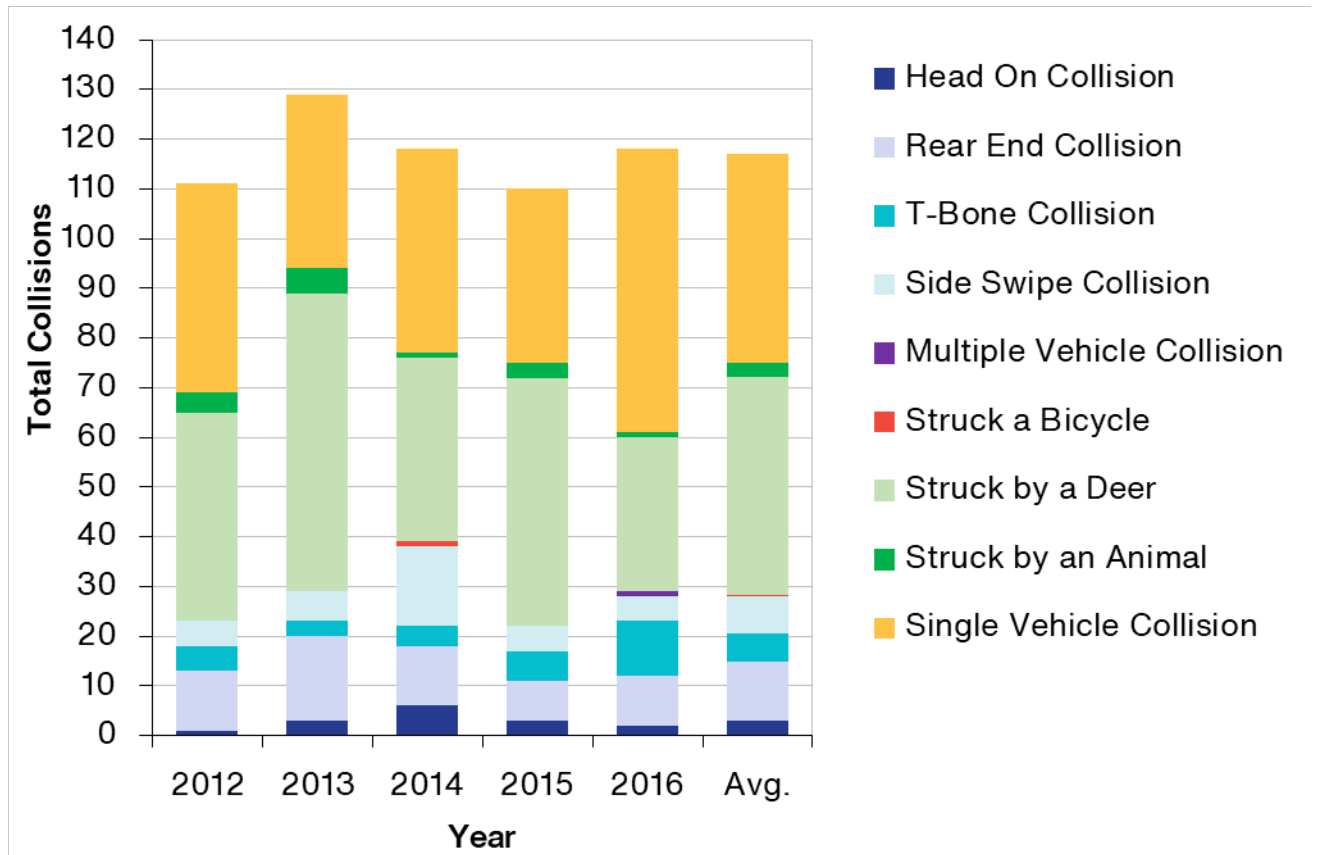
The next most-common collision types were other single-vehicle collisions at 36% of reported collisions. Collisions involving more than one vehicle accounted for 24% of reports collisions (10% rear end collisions, 6% side swipe collisions, 5% T-bone collisions, 3% head-on collision).

While a small proportion of incidents, year over year, T-bone collisions appear to show an increasing trend (from 5 annually in 2012 to 11 in 2016). (Roundabouts can reduce the number and/or severity of T-bone collisions vs. other intersection types.)

²⁴ MTO. Ontario Highway Programs Interactive Map <<https://www.ontario.ca/page/ontarios-highway-programs#section-1>>. Accessed March 2024.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 7.13: Collision Types by Year in Middlesex Centre, 2012 to 2016



Source: Arcadis analysis of collision data within Middlesex Centre (2012-2016)

Exhibit 7.14 summarizes the road intersections with the highest total collisions in Middlesex Centre from 2012 to 2016. Shaded rows in the table, with descriptions marked with an asterisk, are intersections where neither roadway is under the of the Municipality jurisdiction.

The top 10 intersections involving Middlesex Centre roads, based on total number of collisions are further described below.

PHASE 1: NEEDS AND OPPORTUNITIES**Exhibit 7.14: Municipality Intersections Ranked by Total Collisions, 2012-2016**

Rank	Intersection	Collisions	Wildlife-Related	Single-Vehicle	Multi-Vehicle
1	Coldstream Road and Oxbow Drive	21	48%	24%	29%
1	Denfield Road and Medway Road	21	57%	14%	29%
-	Hyde Park Rd (CR 20) and Medway Rd (CR 28)*	14	79%	14%	7%
3	Amiens Road and Ilderton Road	13	92%	8%	-
4	Glendon Dr (CR 14) and Old River Rd	10	10%	70%	20%
-	Egremont Dr (CR 22) and Ilderton Rd (CR 16)*	8	100%	-	-
5	Carriage Road and CR 3 (Gideon Drive)	8	75%	25%	-
5	Nairn Road (CR 17) and Oxbow Drive	8	50%	38%	13%
7	Adelaide Street N and Thirteen Mile Road	7	-	100%	-
7	Adelaide Street N and Twelve Mile Road	7	-	86%	14%
7	Hyde Park Road and Fourteen Mile Road	7	43%	43%	14%
7	Hyde Park Road and Thirteen Mile Road	7	83%	17%	-
-	Ilderton Rd (CR 16) and Richmond St (Hwy 4)*	6	83%	17%	-
11	Amiens Rd and Oxbow Dr	6	50%	17%	33%
11	Carriage Road and Harris Road	6	50%	33%	17%
11	Eight Mile Road and Richmond Street (Hwy 4)	6	83%	-	17%
11	Longwoods Road (CR 2) and Woodhull Road	6	83%	17%	-
11	Medway Road and Vanneck Road	6	-	67%	33%

PHASE 1: NEEDS AND OPPORTUNITIES

Rank	Intersection	Collisions	Wildlife-Related	Single-Vehicle	Multi-Vehicle
11	Old River Road and Pulham Road	6	20%	40%	40%
11	Sunningdale Road W and Vanneck Road	6	80%	-	20%
-	Richmond St (Hwy 4) and Medway Rd (CR 28)*	5	100%	-	-
-	Ilderton Rd (CR 16) and Wonderland Rd (CR 56)*	5	40%	60%	-
-	Carriage Rd (CR 15) and Longwoods Rd (CR 2)*	5	20%	80%	-
18	Denfield Rd and Sunningdale Rd W	5	48%	24%	29%
18	Longwoods Rd (CR 2) and Brigham Rd	5	57%	14%	29%
18	Richmond St (Hwy 4) and Fourteen Mile Rd	5	79%	14%	7%
18	Vanneck Rd (CR 38) and Coldstream Rd	5	92%	8%	-

Note: * Neither roadway is under Middlesex Centre jurisdiction.

Source: Arcadis analysis of collision data within Middlesex Centre (2012-2016)

7.7 Needs

Based on technical analysis, input received from public and stakeholders during TMP Phase 1 engagement, together with other considerations and best practices, the following outlines key needs or issues related to local municipal roads in Middlesex Centre.

A better balance of County vs. Middlesex Centre priorities for County Roads in settlement areas is desired. Provincial, County and local municipal roads make up an interconnected road network hierarchy that generally works well. The Municipality of Middlesex Centre is generally satisfied with the allocation of roads between County and local municipalities, and is aware that the County periodically reviews roads for transfer as needed. The greatest concerns about County vs. Municipality road function/priority, however, is within Middlesex Centre's settlement areas, where high speeds on County roads can make access to/from intersecting roads difficult and make use of and crossing the roadway by

PHASE 1: NEEDS AND OPPORTUNITIES

pedestrians and cyclists very challenging and potentially unsafe. Better balance of the through-traffic/overall mobility function of County roads with the place-making, mixed use development and multi-modal goals of Village Centres they pass through is desired.

Capacity constraints are anticipated on County roads into the future. Forecasted growth in Middlesex Centre is anticipated to strain future road network capacities. Middlesex Centre has seen strong growth in recent years, and its population is anticipated to double from 17,800 residents in 2016 to 35,600 by 2046. This growth will be concentrated in Komoka-Kilworth (63%) and Ilderton (20%). Likewise, employment is anticipated to grow from approximately 6,560 jobs in 2021 to 11,650 jobs by 2046, with a planned new industrial area near Delaware representing a large share of this growth. Similarly, municipalities near Middlesex Centre are also expected to see considerable growth into the future, especially the City of London. These changes will result in capacity constraints on Glendon Drive (CR 14) as well as Longwoods Road (CR 2), in the absence of road network improvements.

Middlesex County has already developed an improvement plan for Glendon Drive, which the Municipality of Middlesex Centre explicitly supports in its Official Plan. The Glendon Drive plan will also address traffic operations concerns reported in the TMP public opinion survey, in particular difficulties in accessing Glendon Drive to and from streets and businesses that connect to or face Glendon Drive, and the need for safe pedestrian walkways and crossings.

Safety issues due to driver behaviour such as speeding are a top concern.

Speeding and poor driver behaviour are a top concern in Middlesex Centre, as was noted in the TMP's public opinion survey results. Increased enforcement or other measures are desired to mitigate these issues. Two specific roadways of concern for speeding are County roads: Longwoods Road (CR 2) through Delaware and Glendon Drive (CR 14) through Komoka-Kilworth. Both County roads connect directly to Highway 402 interchanges, so drivers accustomed to the 110 km/h speed limit on Highway 402 often have difficulty slowing down to arterial road speeds. Cooperation with the County to regulate speeds on selected County roads is needed. The Municipality is also addressing speeding concerns on Middlesex Centre roads via its Vision Zero Road Safety Campaign, a Council-endorsed strategy focused on promoting road safety through dedicated Vision Zero initiatives.

PHASE 1: NEEDS AND OPPORTUNITIES

Traffic collisions may be reduced by addressing infrastructure factors. A review of traffic collision data from 2012-2016 found that the most common cause of traffic incidents was collisions with wildlife, at 49% of reported collisions. It may be possible to reduce the numbers of wildlife collisions at common wildlife collision locations by adding fencing, increasing the clear distance between woodlots and roadway, adding street lighting, or other means. A review of the top ten collision locations in this report noted that some steps have already recently been taken to increase visibility at the intersections. Other measures could include increasing the visibility of stop signs by adding or widening stop bars.

Increased separation between vehicles and cyclists is needed. A lack of separation between vehicles and cyclists on roads in Middlesex Centre was also a top concern among TMP survey participants. If cyclists are to cycle safely on roads in the municipality, appropriate cycling infrastructure is needed, and priority connections noted include Komoka-Kilworth to London and Ilderton to London. Other participants noted cyclist safety/operations concerns, especially for cyclists not on designated cycling paths, and some were of the opinion that cycling lanes are NOT needed (e.g. there is not enough cycling demand to justify the cost).

Transporting farm equipment can be challenging. As Middlesex Centre is a largely rural municipality with a strong agricultural base, responding to the needs of this industry is important to support the economy of the Municipality and the businesses of its local farmers. Regarding the safe transportation of agricultural equipment, identifying and prioritizing corridors for upgrades or widening that sees higher volumes of farming vehicles is needed.

There is a lack of electric vehicle charging infrastructure in Middlesex Centre. While the market share of electric vehicles is increasing, there is only one public electric vehicle charging station in Middlesex Centre. The Municipality can identify strategic locations to provide charging stations and install them, potentially with support from other levels of government.

7.8 Opportunities

The following opportunities can be considered in developing TMP recommendations related to roads in Middlesex Centre.

Increased clarity of the network role and function of individual Middlesex Centre roads can facilitate decision-making. The road classification framework currently in place requires review to better clarify the travel vs. local access function of

PHASE 1: NEEDS AND OPPORTUNITIES

municipal roads, as well as to better stratify the roadway categories, identify roads that may have a collector function, or to better reflect urban vs. rural conditions. Applying a Complete Streets approach to the road classification framework will also support the Municipality in decision-making in terms of prioritizing different modes along different roadways. Jefferies Road in Komoka Kilworth, for example, is currently classified as a Local municipal road, but may be more appropriate as a collector road to more closely align the roadway with its existing function of serving through traffic to/from Glendon Drive. Moreover, the classification system can help direct the location of multi-modal infrastructure such as sidewalks and cycling connections, especially for new subdivisions.

Encourage the County to refine its functional road classification system to distinguish between urban and rural contexts, and to develop related design guidelines. Different counties have different ways of addressing the shared interest in arterial roads passing through urban settlement areas. Some counties transfer the continuation of upper-tier roadways into urban areas to the local municipality, allowing the local municipality the freedom to focus on their place-making objectives for the road, while other counties retain the roads as upper-tier roads through the settlements. Encouraging Middlesex County to refine its functional road class system to distinguish between urban and rural contexts as County roads continue through settlement areas, while allowing greater flexibility for these County road segments to help achieve the local municipalities' vision for these urban roads is desired.

Create a comprehensive multi-modal plan for Oxbow Drive. Oxbow Drive runs east-west north of the Komoka-Kilworth urban area, parallel to and approximately 1.4 km north of Glendon Drive (CR 14). It is among the highest-volume local road segments in Middlesex Centre, and as Komoka-Kilworth is a focus of population growth in the Municipality, traffic volumes with further increase. Oxbow Drive has also been identified as part of a key east-west link in the Provincial and County cycling networks, and given its vehicle traffic volumes, shared lanes with vehicle traffic are not appropriate cycling infrastructure for all ages and abilities. The plan can also further address the Coldstream Road and Oxbow Drive intersection safety, as this was the top location for traffic collisions in 2012-2016, and also ensure that the mainline freight rail crossings are safe and appropriate for all travel modes.

Continue to plan for the efficient and reliable movement of goods. An important role of the transportation network is supporting the economic vitality of Middlesex

PHASE 1: NEEDS AND OPPORTUNITIES

Centre. The movement of trucks require special consideration due to their size, weight and potential safety and environmental impacts. Commercial vehicles are vital to the Municipality's economy, and the efficient and safe movement of goods into the future will support residents, businesses and visitors. Efficient connections to Provincial highways are important to accommodate future industrial and commercial growth.

With MTO and the County, explore the possibility of adding a new Highway 402 interchange at Carriage Road (CR 15). Having a more direct connection between Highway 402 and the new large employment area in the Delaware area can make goods movement and commuting travel related to the site more efficient. It can reduce the amount of traffic that would otherwise travel on County and arterial roads to access other interchanges, and also help mitigate potential conflicts between trucks and other road users through communities. County Road 15 (Carriage Road) may be well suited for a new interchange at Highway 402. Further study, as well as support and coordination between the Municipality, the County, the Province, and adjacent municipalities would be needed.

Implement road designs in consideration of trucks and agricultural equipment.

Intersections, roundabouts and bridge structures on routes used by heavy vehicles/trucks and agricultural equipment should consider these vehicles as part of roadway design. Adding laybys periodically to otherwise narrow roads is another solution that may be considered to allow slow-moving agricultural equipment to pull over while maintaining safe road network operations and efficiency for other traffic.

Review standards for bridges and culverts. The Municipality of Middlesex Centre maintains 126 bridge and culvert structures. As more-extreme weather events may now more common than this infrastructure has been designed for, a review of the design standards can ensure that, in application, the infrastructure performs well and remains reliable through these events.

Review design and maintenance concerns for gravel roads. In the TMP public opinion survey, insufficient road maintenance was more of a concern among residents outside of the largest urban centres. Specific concerns were most often expressed relating to gravel roads (better dust suppression, wider road widths or paving needed).

Consider transportation demand management (TDM) strategies. TDM is the use of strategies, policies, infrastructure and technologies to optimize the transportation

PHASE 1: NEEDS AND OPPORTUNITIES

network by influencing and directing travel behaviour toward reduced personal vehicle use. While TDM is often associated with larger municipalities and urban areas, it can help reduce the demand placed on the Municipality's transportation network, and can also replace or delay more expensive capital projects such as corridor widening or rehabilitation by optimizing the existing transportation network. For example, the Municipality's Official Plan identifies the former railway corridor between Denfield and the City of London boundary as a proposed primary trail connection (Schedule E of the Official Plan), promoting and supporting the uptake of sustainable transportation alternatives. The proposed trail is discussed further in Section 11.1 of this document.

As Middlesex Centre continues to grow and London's commuter-shed expands, targeted TDM strategies may be a helpful strategy for Middlesex Centre.

8. Freight Rail

The freight rail lines running through Middlesex Centre represent a potential opportunity to further support industrial growth in Middlesex Centre. It is also important to limit the connectivity challenges the rail lines present for other modes.

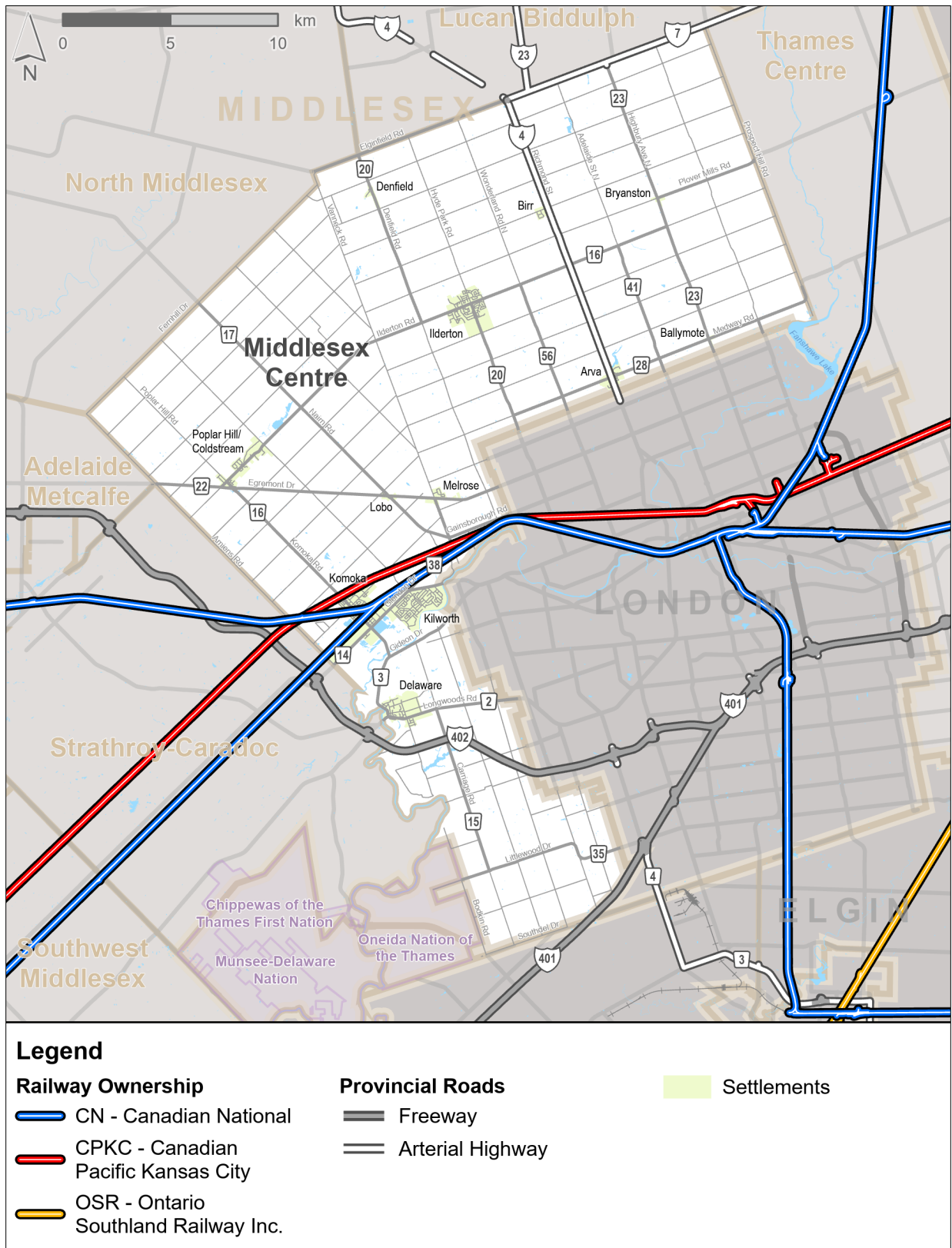
8.1 Rail Lines and Infrastructure

Two active Class 1 federal railways operate mainline track that runs through the west of Middlesex Centre in the Komoka-Kilworth area, as shown in Exhibit 8.1:

- **Canadian National Railway (CN)** operates freight service between Sarnia and London on the Strathroy Subdivision to the north, and between Windsor and the Strathroy Subdivision on the Chatham Subdivision to the south; and
- **Canadian Pacific Kansas City Railway (CPKC)** operates freight service on the Windsor Subdivision between Windsor and London.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 8.1: Freight Rail Lines by Ownership in Middlesex Centre and Area



PHASE 1: NEEDS AND OPPORTUNITIES

8.1.1 Freight Transfer Stations

The above rail freight lines and others nearby serve as an additional opportunity for local industries to move goods to markets farther afield, but freight transfer opportunities are lacking. The potential for a rail transfer station at the convergence of the CN and CPKC rail lines has long been a topic of discussion in Middlesex Centre, though a specific location for the station has not been identified. The planned increase in employment land in Delaware will add further demand for this opportunity.

8.1.2 Rail Crossings

Where the rail lines cross roadways in Middlesex Centre, the crossings are grade-separated (the road passes under the railway) or are at-grade crossings with railway signals/warning systems in place. In two cases, private properties are accessed via timber bridges over the railway.

In light of updated rail crossing guidelines, the appropriateness of crossings based on existing and future traffic volumes will be reviewed for safety, and changes at some locations may warrant improvements.

8.1.3 Abandoned Rail Corridors

The London, Huron and Bruce Railway was formerly a shortline railway that operated between London and Wingham, Ontario, passing north-south through Middlesex Centre in the vicinity of Ilderton. A portion of the rail corridor remains in operation as the Goderich-Exeter Railway along the Exeter Subdivision, north of Middlesex County. No tracks remain along the abandoned corridor within Middlesex Centre. Opportunities to use this rail line as part of the trail network are discussed in Section 10.

8.2 Needs

The following summarizes needs to address related to freight rail in the development of the TMP.

Continue to ensure at-grade rail crossing safety in view of updated guidelines.

Reviewing conditions at at-grade rail crossings based on current guidelines will determine whether any rail crossings warrant changes in crossing configuration or infrastructure.

8.3 Opportunities

Opportunities to consider related to freight rail in TMP development are noted below.

Continue to collaborate toward implementing a road-rail freight transfer opportunity in Middlesex Centre. Increased opportunities to make better use of the rail freight network would be a great support for area industry.

9. Passenger Transit Services

Providing passenger transit services in areas such as Middlesex Centre that have lower population densities and longer travel distances is financially challenging. However, public transportation services can provide an important alternative means of travel to personal automobile travel to meet daily needs, for those who are unable or would prefer not to drive.

While the Municipality of Middlesex Centre does not currently operate public transit services, services are operated through or near Middlesex Centre by the County, the Province, other municipalities and VIA Rail. Current and planned passenger transit services, as well as related needs and opportunities, are described below.

9.1 Current Transit Services

Passenger transit services that operate through or near Middlesex Centre are shown in Exhibit 9.1 and described below.

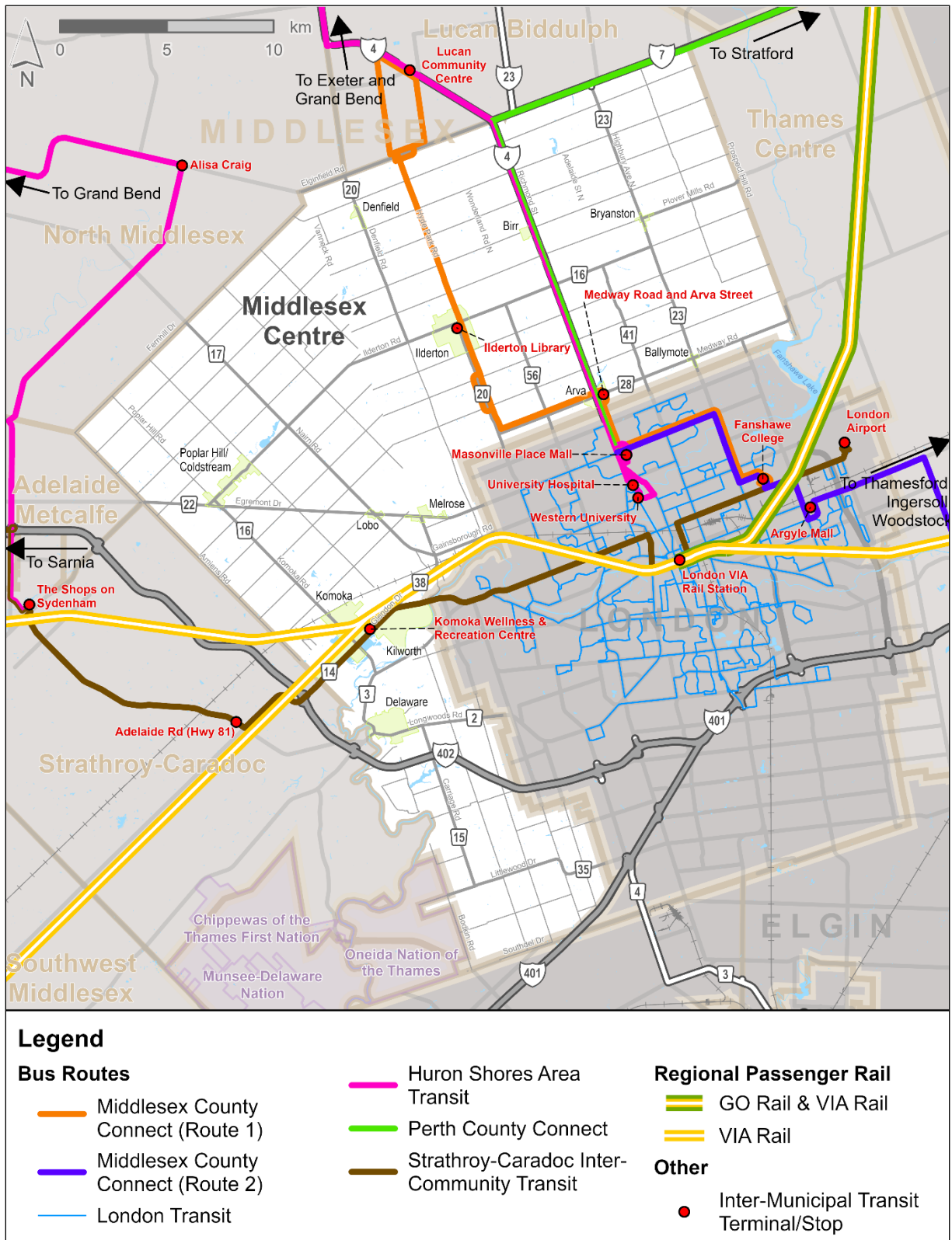
9.1.1 Passenger Rail

VIA Rail is a federal Crown Corporation and Class 1 railway that provides inter-city passenger rail service throughout Canada, operating along CN and CPKC-owned mainline tracks through Middlesex Centre. VIA Rail stations in the vicinity of Middlesex Centre include London, Glencoe, Strathroy, London, and St. Marys. VIA Rail services on these lines as of spring 2023 are as follows:

- Toronto-London-Windsor: four trains per direction daily (three via Glencoe); and
- Toronto-London-Sarnia (via Strathroy and St. Marys): one train per direction daily (eastbound in the morning and westbound in the evening).

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 9.1: Public Transit Services in Middlesex Centre and Vicinity



Note: Routing current as of July 2023.

PHASE 1: NEEDS AND OPPORTUNITIES

GO Transit is a public transit system and division of Metrolinx (a provincial Crown agency) responsible for bus and rail service between major transit hubs in the Greater Golden Horseshoe. GO Transit expanded rail service along its Kitchener Line to southwestern Ontario as part of a pilot project launched by Metrolinx in 2021. The pilot provides daily service between London and Toronto, making intermediate stops in Stratford and St. Marys. The eastbound London-Toronto trip departs London at 5:14 a.m., and the westbound trip departs Toronto at 4:19 p.m.

9.1.2 Bus Transit Services

Middlesex County Connect

Middlesex County provides transit services as Middlesex County Connect, supported by funding by the Province of Ontario's Community Transportation Grant program.

Until late May 2023, Middlesex County provided two scheduled weekday fixed-route services, together with on-demand transit services on Saturdays. The two fixed-route services were a Woodstock-Ingersoll-Thamesford-Thorndale-London route, and a Dorchester-London route.

Based on recommendations from a recent *Rural Transit Needs Assessment Study* (Arcadis IBI Group, 2023), two revised transit routes were implemented in late May 2023, as can be seen previously in Exhibit 9.1:

- **Route 1 : Lucan – Ilderton – Arva – London:** two morning southbound trips toward London and one northbound trip stop at Ilderton and Arva; while two late afternoon northbound trips and one southbound trip stop at Ilderton and Arva; London stops are at Maisonville Mall and at Fanshawe College; and
- **Route 2: Woodstock – Ingersoll – Putnam – Dorchester – London:** One trip daily each way is timed to allow transfer between Routes 1 and 2 at Maisonville Mall or at Fanshawe College.

The routes run Monday to Friday inclusive.

Other Municipal Transit Services

The municipal transit service providers below represent potential partnership opportunities to extend services to or add stops within Middlesex Centre.

PHASE 1: NEEDS AND OPPORTUNITIES

London Transit Commission (LTC) currently provides service entirely within its municipal boundary, adjacent to Middlesex Centre. A connection to LTC services would allow connectivity of nearby Middlesex Centre residents and visitors to a wide range of employment, as well education, shopping, medical and other opportunities within the city throughout the day.

Strathroy-Caradoc Inter-Municipal Transit provides scheduled fixed-route service along a Sarnia-Strathroy-Mount Brydges-Komoka-London route, stopping at the Komoka Wellness Centre and connecting to London VIA rail and London Airport. There are three runs in each direction on weekdays and two on weekend days.

Perth County Connect provides scheduled fixed-route service London-St. Marys-Stratford-Shakespeare-New Hamburg-Waterloo (Route 3), with no stops between St Marys and Masonville Place Mall in London. Although this route runs three trips per direction (Monday through Saturday) through Middlesex Centre along Highway 4, there are currently no stops within Middlesex Centre.

Huron Shores Area Transit's Route 2 is a scheduled fixed-route service from Grand Bend to London, stopping in Lucan and in London at Maisonville Place Mall and at University Hospital, running two trips per direction per day. Although this route runs through Middlesex Centre along Highway 4, there are currently no stops within Middlesex Centre. Route 4 Grand Bend-Strathroy runs two trips per direction daily near but not within Middlesex Centre.

The above municipalities as well as Middlesex County are among nine member municipalities that form the Southwest Community Transit Association (SCT), a voluntary association with the purposes of coordinating inter-municipal bus transportation in Southwest Ontario, developing best practices, identifying economies of scale and providing a common platform to support long-term sustainable transit funding.

In addition, **FlixBus** is a private bus service provider with direct service between London and Windsor on Highway 401, but without stopping in Middlesex Centre.

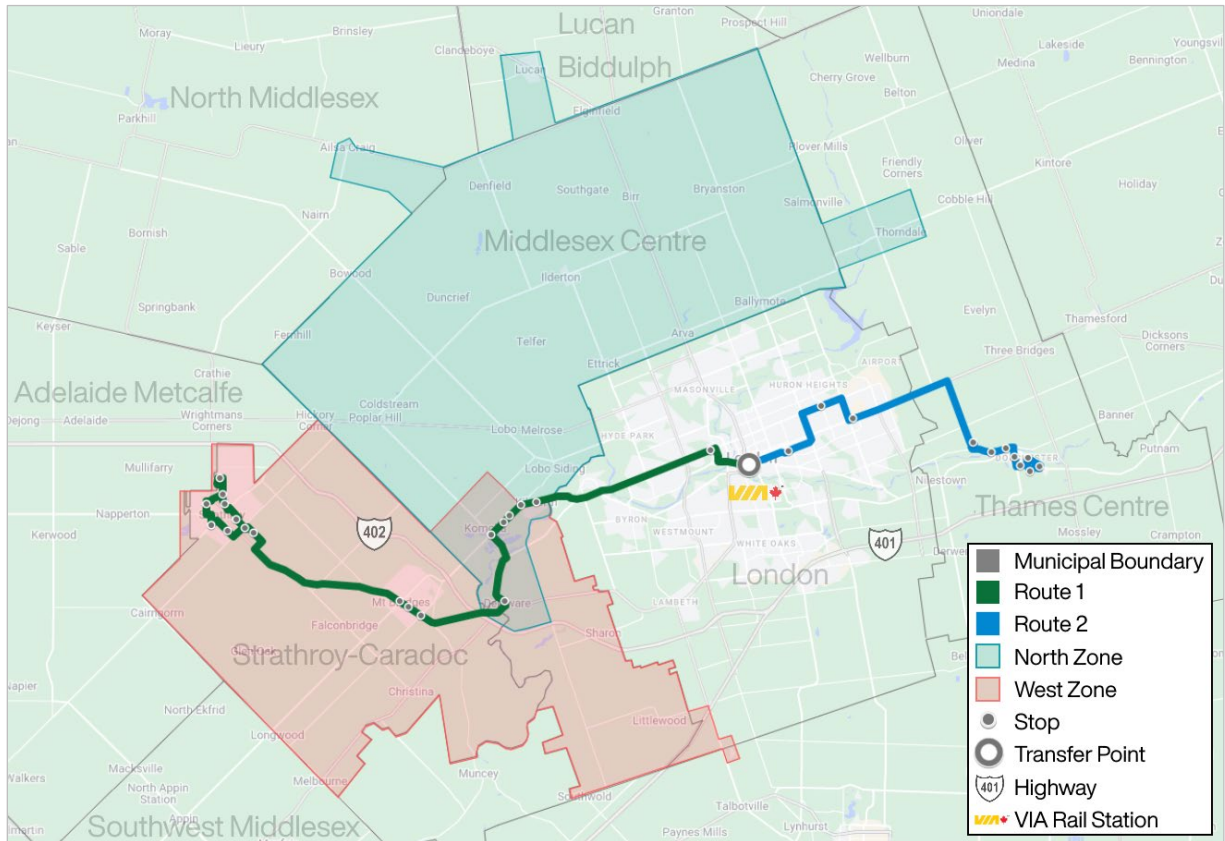
9.2 Planned Passenger Transit Services

Middlesex County's *Rural Passenger Transit Assessment* study recommended a long-term hybrid transit solution as the preferred service delivery approach, integrating London-centric fixed routes and demand-responsive services in rural

PHASE 1: NEEDS AND OPPORTUNITIES

areas of dispersed demand. The post-2025 transit service, shown in Exhibit 9.2 includes the following:

Exhibit 9.2: Middlesex County Recommended Transit Service, Post-2025



Source: Arcadis IBI Group for County of Middlesex (2023). *Middlesex County On-Demand Transportation Needs Assessment Study*. Base map: Google Maps 2023 (cropped image).

- **Two fixed routes** forming an east-west spine across the corridor of highest travel demand, population density and residential development growth – the westerly route would include several stops in Delaware, Komoka and Kilworth;
- **Two on-demand zones** (north and west) overlapping in the Komoka-Kilworth area – the entirety of Middlesex Centre is covered between both zones (the new Amazon fulfillment Centre in Southwold is also included within the west zone); and
- **A taxi voucher program** to subsidize taxi trips in areas that do not initially receive transit service.

9.3 Needs

The Middlesex Centre TMP will seek to address the following needs related to public transit services.

Address the transportation needs of those who are unable to or choose not to drive. Passenger transit services are an important means of addressing the transportation needs of aging population and of those who are not physically or financially able to drive. TMP public opinion survey respondents noted that they would be most interested in using transit services, to access longer-distance travel (e.g. London's airport and passenger rail station), and to access shopping, entertainment/ recreation opportunities, and health care or related services.

Provide services appropriate to demand levels. The TMP can support transit services, either directly or in partnership with Middlesex County or other municipalities, that are appropriate to transit ridership demand levels. Some TMP public opinion survey respondents noted that they do not feel that providing transit services is cost-effective or realistic for rural communities; however, there are various means of providing transit services that are more suitable to lower-demand connections such as on-demand services, with potential fixed route services serving higher-demand connections such as between larger settlement areas and the City of London.

9.4 Opportunities

Opportunities the TMP can potentially act upon toward increasing access to public transit in Middlesex Centre are noted below.

Continue to cooperate with and support the Middlesex County Connect transit service. The County has recently updated its transit system to include a fixed-route connection between Ilderton and London, and its longer-term plan includes a fixed route with multiple stops in Komoka-Kilworth, along with on-demand services that cover the entirety of Middlesex Centre. The County's planned service aligns with Middlesex Centre's priorities of connecting larger settlement areas and providing connections to London. Middlesex Centre can promote Middlesex County Connect services, and can monitor use of the service with the County so that the services can be refined as needed to optimize ridership; for example, helping to ensure that bus stops on fixed routes are suitably placed and comfortable for users.

PHASE 1: NEEDS AND OPPORTUNITIES

Established municipal transit systems operating near or through Middlesex Centre represent additional partnership opportunities. Being in close proximity to the City of London's extensive London Transit Commission (LTC) network presents an opportunity for enhanced transit service connectivity. With Komoka-Kilworth especially being just a few kilometres beyond LTC's current service area, and Ilderton and Delaware also being nearby, an extension of LTC routes, in partnership with Middlesex Centre and the County, would provide greatly enhanced transit connectivity for these communities. Transit services that pass through Middlesex Centre, run by other municipalities, are also partnership opportunities. For example, perhaps stops could be allowed by Perth County Connect in Arva and Birr when pre-arranged by passengers as the service runs along Highway 4 to/from London.

Population growth in urban settlement areas will increasingly support transit operations. With anticipated population of 15,900 in Komoka-Kilworth and 7,100 in Ilderton by 2046, ridership and financial sustainability of passenger transit services within and to/from these settlement areas will continue to improve.

10. Cycling Network

With a growing interest in cycling for recreation, exercise and transportation, improving the safety, connectivity and desirability of cycling routes within and between settlement areas in Middlesex Centre, as well as to settlements beyond its borders, would result in a more robust multi-modal transportation system.

This section describes the current pattern of cycling flows, and current and planned cycling networks, and outlines related needs and opportunities.

10.1 Cycling Flows

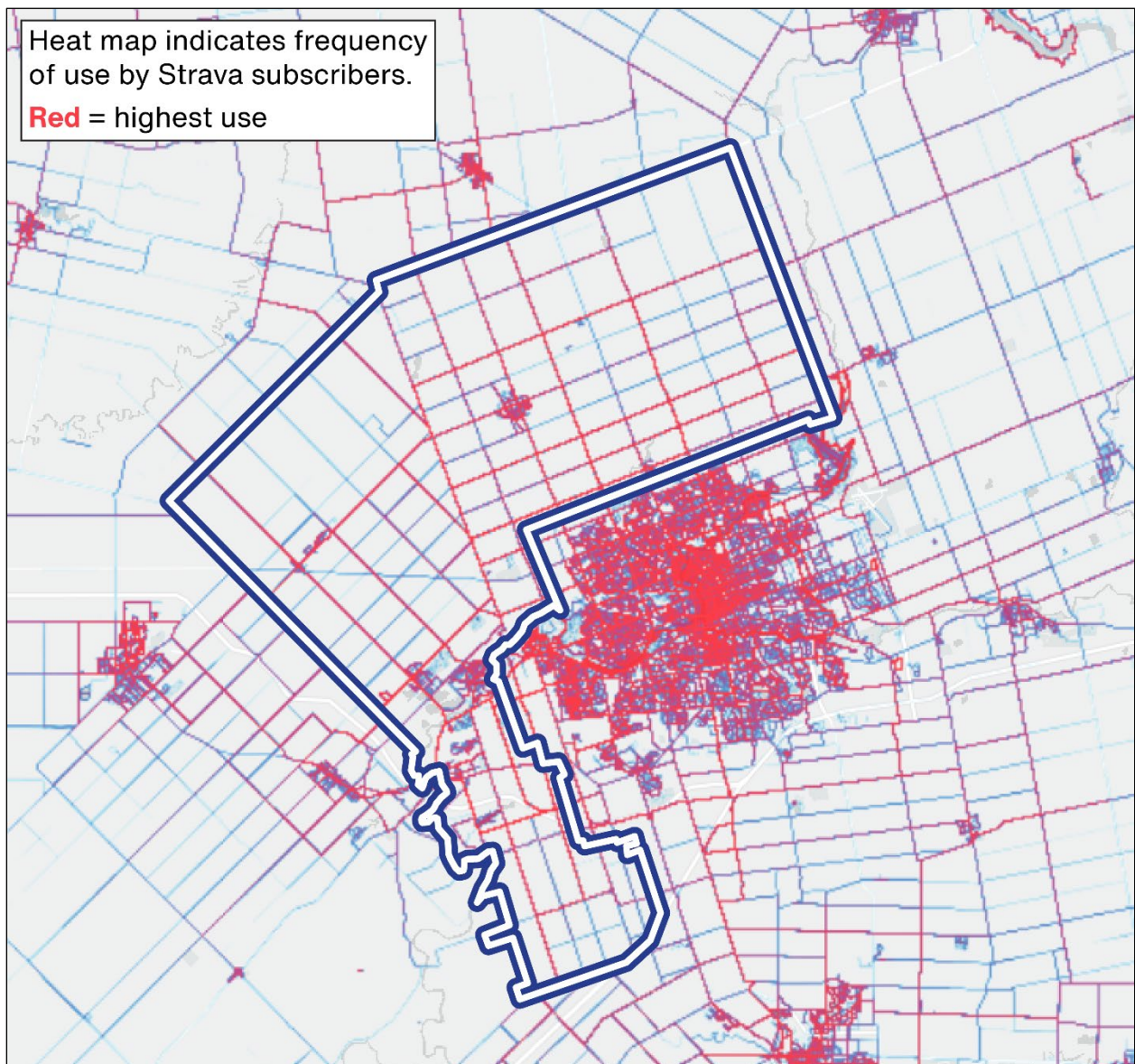
Strava provides an app for its subscribers to track their physical exercise (i.e. cycling and running) using Global Positioning System (GPS) data. The consolidated GPS data across Strava subscribers can be used to assess the relative frequency of use along different routes, as shown in Exhibit 10.1 in the vicinity of Middlesex Centre. It should be noted that Strava cycling subscribers are typically confident cyclists willing to cycle longer distances and use routes that are not always suitable for all ages and abilities given current cycling infrastructure,

PHASE 1: NEEDS AND OPPORTUNITIES

but the plot does provide a general indication of the relative demand for cycling in a given area. W

Within Middlesex Centre, the plot shows high cycling demand and relatively high cycling frequencies within and between settlement areas, along selected County and local municipal roads within rural areas, and near the City of London.

Exhibit 10.1: Strava Heat Map of Relative Subscriber Frequency of Routes in Middlesex Centre and Vicinity



Source: Strava Global Heatmap, <Strava.com/heatmap> Accessed December 2022.
Municipal boundary overlaid.

10.2 Planned Cycling Networks

Middlesex Centre routes are part of planned cycling networks at the Provincial, County and Municipality level, as outlined below.

10.2.1 Province-Wide Cycling Network

The Government of Ontario’s Province-Wide Cycling Network in the vicinity of Middlesex Centre is shown in Exhibit 10.2. It shows London as a “hub”, with connections east to Woodstock, south to St. Thomas, west to Sarnia, and northwest to the Kettle Point area near Lake Huron. The latter two connections pass through Middlesex Centre and include a connection along Oxbow Drive north of Komoka-Kilworth, with the remaining segments along County roads (as also identified in the County’s cycling network).

Exhibit 10.2: Province-Wide Cycling Network – Middlesex Centre Area



Source: MTO icorridor. <<https://icorridor-mto-on-ca.hub.arcgis.com/>> Accessed June 2023. Colour adjusted to increase contrast

10.2.2 Middlesex County Cycling Network

Middlesex County's first comprehensive Cycling Strategy was developed in 2018, proposing a cycling network of cycling infrastructure in Middlesex Centre, shown in Exhibit 10.3:

- 82.6 kilometres of paved shoulder routes;
- 56.4 kilometres of buffered paved shoulder routes;
- 0.86 kilometers of cycle track routes;
- 25 kilometres of proposed signed routes; and
- 6 kilometres of proposed multi-use trails.

The on-road facilities are proposed along selected County roads as well as local municipal roads.

The County network in Middlesex Centre includes the portions of the Province's network noted above.

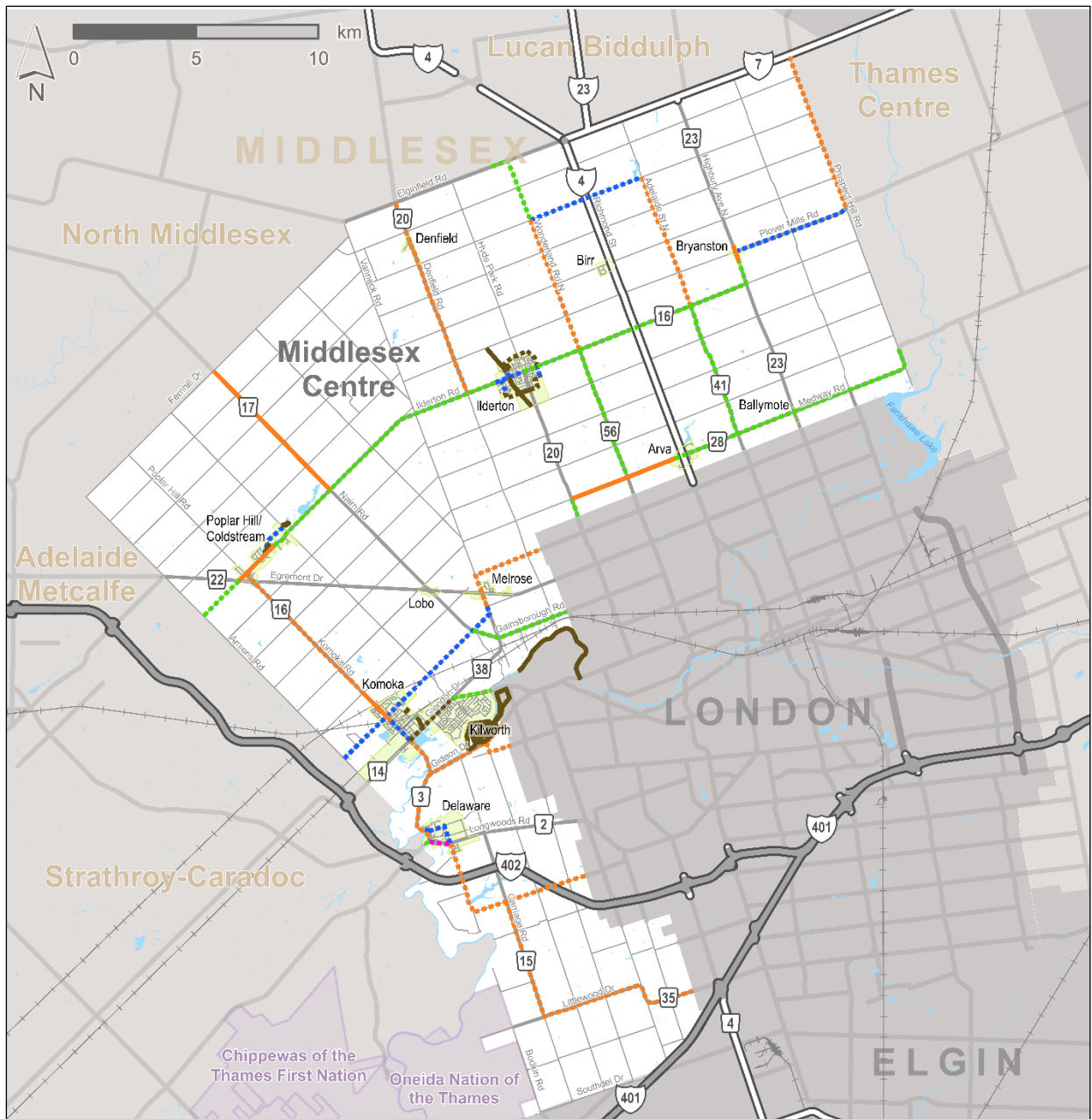
Of the County cycling network routes, a large majority have not yet been implemented. The existing cycling network in Middlesex Centre is limited to about 16 kilometres of paved shoulders across several segments of County roads, as well as 8 kilometres of off-road trails, mostly in Komoka Provincial Park and along the Thames River into the City of London.

Overall, the general strategy for implementing the County's cycling network plan is to implement the facilities in tandem with County or Middlesex Centre road resurfacing or rehabilitation projects, which will help manage the costs of implementation.

As the Cycling Strategy was developed in 2018, a review is required to ensure the facility types as previously identified, as stronger guidance has since been prepared by province in the 2021 update of *Ontario Traffic Manual: Book 18 – Cycling Facilities*. The review should take into consideration current and planned residential and employment developments, forecasted traffic volumes, and future traffic network changes. A couple of examples where revisions to the planned network may be needed are noted below.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 10.3: Middlesex County Cycling Network Plan (2018) in Middlesex Centre



Legend

Proposed Facility Types

- ⋯ Buffered Paved Shoulder
- ⋯ Cycle Track
- ⋯ Multi-use Trail
- ⋯ Paved Shoulder
- ⋯ Signed Route

Existing Trails

- Paved Shoulder
- Off-Road Trail

Other

- Settlements

Municipality Road Network

- Provincial Freeway
- Provincial Arterial Highway
- County Road
- Local

PHASE 1: NEEDS AND OPPORTUNITIES

Oxbow Drive north of Komoka-Kilworth currently has traffic volumes of over 2,000 average daily vehicles. This traffic volume is higher than current OTM Book 18 guidelines for a signed route facility type currently identified in the County's Cycling Network. At these traffic volumes, a degree of separation between motorists and cyclists is needed, e.g. paved shoulder/buffered paved shoulder, separated cycling lane, etc. Exhibit 10.1 (Strava data) showed that in the Komoka-Kilworth Area, Gainsborough Road/ Nairn Road (both CR 17) and Oxbow Drive is a route currently used by confident cyclists to travel east/west (and generally avoid the busier Glendon Drive/CR 14).

Delaware is planned to accommodate nearly 60% of all employment growth in Middlesex Centre between 2016 and 2046 (Section 3.6.3). This will result in significant growth and redistribution of traffic including medium and heavy trucks (in particular should a new Highway 402 interchange be built in the area). An alternative parallel cycling route to Carriage Road could be considered.

10.2.3 Middlesex Centre Trails Master Plan Network

The 2014 Middlesex Centre Trails Master Plan network provides additional routes primarily for local trips, connecting with the above broader network. The planned network is discussed below in Section 11. The network will connect to the County network described above for longer-distance trips.

10.3 Needs

The TMP will identify ways to help Middlesex Centre to provide safer and more connected cycling opportunities for residents and visitors of all ages and cycling abilities, taking note of the needs identified below.

Enhanced cycling infrastructure is needed to improve safety for both cyclists and motorists. Increased separation between cyclists and motor vehicles is desired by both drivers and cyclists. In the TMP public opinion survey, inadequate separation from cyclists was one of the two potential issues most commonly noted as a major concern (49% of respondents) for those who travel as a driver or passenger on roads that are the responsibility of the Municipality of Middlesex Centre. Further, the most commonly-selected factors survey respondents identified that would encourage them to do so were increased separation of cyclists from traffic (48%) and a more complete and connected cycling network (46%).

PHASE 1: NEEDS AND OPPORTUNITIES

Following *Ontario Traffic Manual Book 18 (2021)* guidelines, desirable cycling facilities for all ages and abilities can be determined based on factors such as roadway vehicle travel speeds and volumes. Given the high costs of providing cycling infrastructure such as paved shoulders, dedicated bike lanes and paved trails, a phased approach will be needed for implementation, prioritizing connections most likely to be used. Respondents to the TMP public opinion survey noted that connections between Komoka-Kilworth and London, and Ilderton and London, were among connections most needed to be provided for cyclists.

A review of the County's cycling network is needed as it relates to Middlesex Centre routes. Initially identified cycling facility types in the County's network plan will need review and potential updates in light of updated Provincial cycling infrastructure design guidelines, as well as current and anticipated traffic volumes, speeds, etc. This should also include the suitability of network crossings at County roads and Provincial roads, with safety in mind. Clarity on the phasing and timing of the County's network would also allow the Municipality of Middlesex Centre to phase its network connections accordingly.

10.4 Opportunities

Opportunities the TMP can potentially act upon related to enhancing cycling in Middlesex Centre are noted below.

Continue to support the County in the implementation of its planned cycling network Support for the plan is explicitly stated in the Municipality's Official Plan. The Municipality will build on the County's network to provide local connections to local destinations, points of interest and natural areas.

Leverage the general increasing interest in cycling. While 62% of TMP public opinion survey respondents expressed some degree of cycling confidence, 38% are currently not cyclists, with the oldest age cohorts (ages 60 and older) and those in rural areas least likely to be cyclists. However, in the TMP public opinion survey, 46% of respondents identified an increasing interest in cycling for health and recreation as the most significant ways that travel and transportation will change in Middlesex Centre. The Municipality's growing population includes new residents who previously lived in urban areas with more robust cycling and walking networks, and would have been accustomed to them for cycling and to walking to nearby destinations.

PHASE 1: NEEDS AND OPPORTUNITIES

Leverage the interest in cycling for recreation, while expanding cycling for utilitarian purposes. TMP public opinion survey participants were asked, “For what reasons do you cycle?”. While 40% of respondent noted that they do not cycle, the most common reason selected for cycling for those who do cycle is for recreational purposes at 57% of respondents – virtually all of those who do cycle. Meanwhile only 17% cycle to get to/from shopping, errands, etc. This indicates that Middlesex Centre residents who cycle generally view cycling as a form of recreation or leisure, as opposed to a form of transportation or for utilitarian purposes.

Continue to leverage broader cycling network connectivity opportunities. The Province, the County and adjacent municipalities have plans for cycling networks that Middlesex Centre can connect to. The Municipality should continue to coordinate with adjacent municipalities, in particular the City of London, to establish better cross-jurisdictional connections, such as a multi-use pathway in Komoka/Kilworth to Byron for access to the Thames Valley Parkway.

11. Walking and Wheeling

Active transportation, as defined by the *Provincial Policy Statement (2020)*, is “human-powered travel such as walking and cycling, as well as travel with the use of mobility aids”. Cycling-supportive infrastructure was discussed in Section 10. Supporting the safe movement of pedestrians through a network of connected and accessible sidewalks and off-street trails is also an important component of the local transportation system in Middlesex Centre, encouraging the use of active transportation options and supporting the development of healthy and complete communities.

11.1 Trails Network

The *Middlesex Centre Trails Master Plan (2014)*, also noted in Section 4.3.4, was developed to guide the development of future trails and supporting amenities, focusing on pedestrian pathways, sidewalks and trail connections. With input from the community and stakeholders, a recommended conceptual trail network was developed covering a municipality-wide total of over 101 kilometres of trails, designated as follows:

PHASE 1: NEEDS AND OPPORTUNITIES

- **Primary:** support the widest range of uses and connect between settlement areas;
- **Secondary:** connect between primary and tertiary trails; and
- **Tertiary:** short loops and pathways within parks.

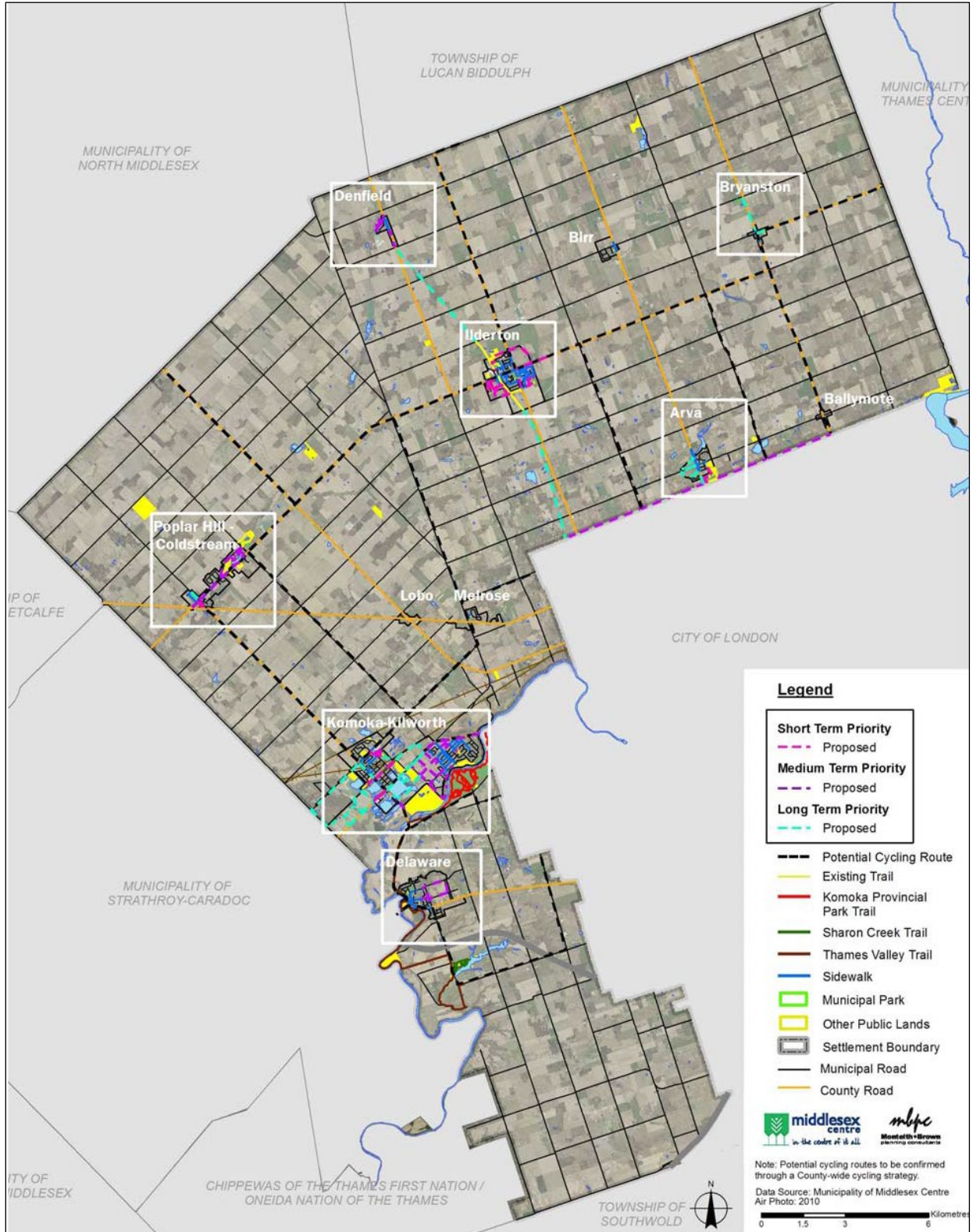
The Trails Master Plan also recommends trail implementation phasing as shown in the overview map in Exhibit 11.1, indicating short, medium and long-term priorities for the identified network.

Also as seen in Exhibit 11.1, the Trails Master Plan identifies potential cycling routes. Because the Trails Master Plan was developed before the County's cycling network, there are some discrepancies. For example, the County's network indicates paved shoulders on Prospect Hill Road (Middlesex Centre's eastern boundary road) north of Plover Mills Road, and a signed trail along Fifteen Mile Road, not indicated in the Trails Master Plan. The County's plan also indicates Medway Road (CR 18) to be part of its network, not shown in the Trails Master Plan.

The Trails Master Plan also encourages the use of former rail corridors as rail trails. It identifies the segment of the former London, Huron and Bruce Railway between Denfield and the City of London boundary as a long-term priority trail. This proposed trail would connect with the multi-use pathway proposed as part of the *City of London Cycling Master Plan Update (2016)*, utilizing the southern expanse of the abandoned railway corridor. The County's cycling network includes only the portions of this network close to Ilderton as part of its plan.

PHASE 1: NEEDS AND OPPORTUNITIES

Exhibit 11.1: Trails Master Plan (2014) Network and Phasing



Source: Middlesex Centre Trails Master Plan (2014)

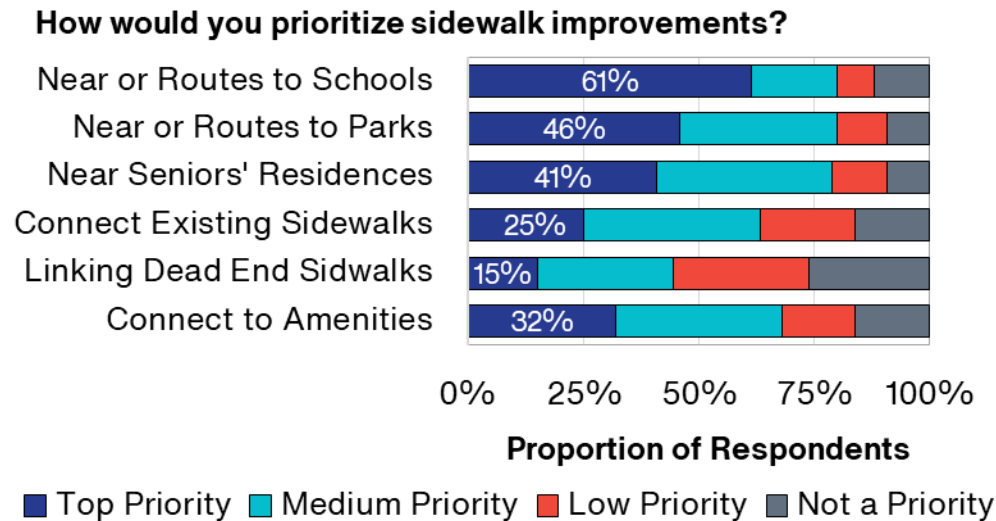
PHASE 1: NEEDS AND OPPORTUNITIES

11.1.1 Sidewalks

The Municipality of Middlesex Centre maintains 35 kilometres of sidewalks along both County and local municipal roads. In accordance with the *Municipal Act, 2001*, the provision, construction and maintenance of sidewalks along upper-tier municipal roads (i.e. County roads) is the responsibility of lower-tier municipalities.

In 2021, the Municipality of Middlesex Centre hosted the *Sidewalks and Streetlights Survey* to collect input on priority areas for new sidewalks and streetlighting over the short-term (one to five years). More than 500 Middlesex Centre residents shared their preferences and priorities for pedestrian infrastructure. Survey participants identified how sidewalk improvements should be prioritized in Middlesex Centre, with results as shown in Exhibit 11.2. The top choice among survey participants was to prioritize sidewalks near schools, including routes to schools.

Exhibit 11.2: Sidewalks and Streetlights Survey (2021) – Summary of Response to Prioritizing Sidewalk Improvements



Source: Adapted from Sidewalks & Streetlights in Middlesex Centre Survey Results (2021)

In the sidewalks and streetlights survey, the top roadways identified by residents as to where they would like to see sidewalks installed are as follows:

- **Kilworth:** Westbrook Drive, Killworth Park Drive, Birchcrest Drive;
- **Komoka:** Glendon Drive, Queen Street, Railway Avenue;
- **Arva:** All roads, St Johns Drive, Medway Road;
- **Birr:** Salisbury Drive, Gwendolyn Street, Thirteen Mile Road;

PHASE 1: NEEDS AND OPPORTUNITIES

- **Delaware:** Young Street, Harris Drive, Lonwoods Drive, Springer Road;
- **Denfield:** Denfield Road; and
- **Ilderton:** Hyde Park Road (complete), King Street, Ilderton Road.

For the TMP public opinion survey, the factors most frequently selected by respondents to support increased walking among survey participants were as follows:

- Safer/more pedestrian crossings (41%);
- Improved sidewalks / streetscapes (40%);
- Fewer gaps in the sidewalk network (37%); and
- Improved night-time lighting (37%).

A total of 12% of respondents indicated that they were either not physically able or are uninterested in walking more often.

11.2 Needs

The following outlines key needs or issues related to walking and wheeling in Middlesex Centre.

A lack of safe pedestrian road crossings across busy roadways was frequently noted as a concern in the TMP public opinion survey. Two specific locations were frequently perceived to have inadequate pedestrian crossing provision are across County roads: in Delaware across Longwoods Drive (CR 2) at Springer Road/Victoria Street, and in Ilderton across Hyde Park Road (CR 20) at Heritage Drive. Both locations have “school crossing” signage only, which gives pedestrians the right of way to cross only when a crossing guard is present, and can be ambiguous to both pedestrians and drivers. A safe pedestrian crossing between Komoka and Kilworth across Glendon Drive (CR 14) is also desired.

Safe walking routes between homes schools are needed. The Municipality’s previous Sidewalks and Streetlights survey indicated a high importance respondents placed on having sidewalks near or connecting to schools. TMP public opinion survey respondents noted that a lack of active transportation infrastructure between Oxbow Public School and Ilderton is a concern – a lack of sidewalks or trails and 90 km/h posted speeds precludes active transportation. (The County’s draft cycling network does include Ilderton Road or CR 16 as part of its planned network – potentially the segment of the road between Ilderton and the school could be prioritized for implementation.)

PHASE 1: NEEDS AND OPPORTUNITIES

A connected network for pedestrian activity is needed in community settlement areas. This network would include not only sidewalks, but also safe crossings and appropriate night-time lighting as well as shaded areas and seats/benches for resting (especially in senior walkways).

Increased alignment between the Trails Master Plan and the County's cycling network would provide clearer guidance. The Trails Master Plan was developed in 2014, before County developed its 2018 cycling network. Alignment between the two plans, especially as the County's network includes routes along Middlesex Centre roads not identified in the Trails Master Plan, is needed. The identified connections in the Trails Master Plan and their identified facility types, in particular for shorter-term/priority segments, should also be reviewed to ensure that they continue to be most suitable given current and future traffic conditions.

11.3 Opportunities

Opportunities the TMP can potentially act upon related to making it easier to walk and wheel to local destinations in Middlesex Centre are noted below.

Build upon and implement the Trails Master Plan network. The 2014 Trails Master Plan network provides robust guidance for a connected trails network in Middlesex Centre, and should be updated and continue to be implemented, taking note of any refinements to the network needed upon review as noted above.

Prioritize a network of sidewalks and trails in new development in Middlesex Centre. While safer pedestrian infrastructure is generally desired by Middlesex Centre residents, a segment of TMP public opinion survey respondents are strongly opposed to sidewalks, specifically to adding new sidewalks in existing neighbourhoods. Sidewalks are much easier to accept when they have always been part of one's neighbourhood. The provision of sidewalks and trails should follow directly from the tiered functional road classification network (e.g. guidance may differ for sidewalks on collector roads vs. local roads).

Consider alternate sidewalk designs. The current sidewalk design in Middlesex Centre places sidewalks 2 metres or so away from the road edge. While this is within the Municipality's right-of-way and allows space for utilities and accumulated snow, it can also have the effect of bisecting front lawns and bringing pedestrians closer to residents' homes. An alternative sidewalk design may be more acceptable in some instances in some established neighbourhoods.

12. Air

While there are no airports in Middlesex Centre, London International Airport, located in the northwest of the City of London, is a nearby major commercial airport with scheduled passenger services. London International Airport hosts 40 commercial airline departures and arrivals daily and in 2019, accommodated the arrival of nearly 680,000 passengers²⁵.

Other small airports nearby Middlesex Centre include the following:

- Strathroy (Blue Yonder) Airport;
- Mount Brydges/Warren Field Aerodrome and Melbourne Aerodrome in Strathroy-Caradoc;
- Lucan Airport in Lucan Biddulph;
- London/Chapeskie Airport in Thames Centre; and
- St. Thomas Municipal Airport (certified regional airport) in Central Elgin.

The above airports are outside the jurisdiction of the municipality and not part of the scope of the TMP beyond supporting access, in particular to London International Airport.

²⁵ Statistics Canada, CANSIM Table 401-004

13. Summary and Next Steps

This section provides a summary of Phase 1 of the TMP study and outlines next steps.

13.1 Summary of Phase 1

Developing the Municipality of Middlesex Centre's first standalone TMP is an important opportunity to ensure that transportation policy and investment keeps pace with anticipated growth, toward providing a robust multi-modal transportation network to best serve Middlesex Centre residents, businesses and visitors in settlement areas and in rural areas in the Municipality.

Phase 1 of the TMP study included the following:

- Developing an understanding of the Municipality's physical, governmental and socio-economic context;
- Reviewing current relevant policies, planning documents and initiatives of the Municipality as well as those of Middlesex County, the Province, adjacent jurisdictions and affected Indigenous nations;
- Developing a transportation Vision and Goals, which will help direct the study process and will form a framework for assessing potential transportation solutions;
- Conducting engagement activities, which included a study website, a virtual public information centre, a public opinion survey, a mapping tool, and stakeholder engagement – all of which provided a wealth of insight into local transportation needs and opportunities;
- Analysis of travel patterns and trends affecting transportation Middlesex Centre; and
- A mode-by-mode review of available information on Middlesex Centre's transportation system and usage, and identifying related needs and opportunities.

13.2 Next Steps

The next phase of the TMP study—Phase 2: Transportation Network Development—focuses on developing potential context-sensitive transportation solutions that respond to the needs and opportunities identified in Phase 1. These solutions are reviewed through an assessment framework based on the transportation Vision and Goals identified for the study. Supporting strategies and policies are also identified.

The second round of engagement also provides an opportunity for public and stakeholder input on draft recommended projects, policies and transportation solutions that are identified.

Following Phase 2, Phase 3 involves drafting the TMP report, further refining and also phasing the recommendations developed through the study process. Council endorsement as well as additional public and stakeholder review of the TMP document is required before the TMP is finalized.

Appendix A: Policy and Planning Review Detail

Policy and Planning Review Detail

This appendix includes additional detail about the following policies or plans:

Provincial Policy Statement

Provincial Policies and Plans

Provincial Policy Statement (2020)

Transportation planning and policy directions from the PPS that are particularly important to the development of the TMP include the following:

- Coordination:
 - 1.2.1 A coordinated, integrated and comprehensive approach should be used when dealing with planning matters within municipalities, across lower, single and/or upper-tier municipal boundaries, and with other orders of government, agencies and boards including: [...]
 - d) infrastructure, multimodal transportation systems, public service facilities and waste management systems [...].
- Public Spaces, Recreation, Parks, Trails and Open Space
 - 1.5.1 Healthy, active communities should be promoted by:
 - a) planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate active transportation and community connectivity [...].
- Transportation Systems:
 - 1.6.7.1 Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs.
 - 1.6.7.2 Efficient use should be made of existing and planned infrastructure, including through the use of transportation demand management strategies, where feasible.
 - 1.6.7.3 As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries.

PHASE 1: NEEDS AND OPPORTUNITIES

- 1.6.7.4 A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.
- Transportation Corridors:
 - 1.6.8.2 Major goods movement facilities and corridors shall be protected for the long term.
 - 1.6.8.4 The preservation and reuse of abandoned corridors for purposes that maintain the corridor's integrity and continuous linear characteristics should be encouraged, wherever feasible.
- Energy Conservation, Air Quality and Climate Change:
 - 1.8.1 Planning authorities shall support energy conservation and efficiency, improved air quality, reduced greenhouse gas emissions, and preparing for the impacts of a changing climate through land use and development patterns [...]

Middlesex County Policies and Plans

County of Middlesex Official Plan (2023)

The following includes additional detail about sections of the County's Official Plan that are of particular relevance to the Middlesex Centre TMP.

Selected policies are copied **verbatim** below.

2.3.4 Economic Development

d) encourage local municipalities to promote a high standard of urban design by prioritizing principles such as pedestrianization, compact form, mixed-use high quality functional space that include natural and built features, accessibility and universal design, to create healthy vibrant communities which attract investment;

e) Support local municipalities to promote economic development opportunities adjacent to Provincial 400 series highways where justified through an amendment to the local official plan.

PHASE 1: NEEDS AND OPPORTUNITIES

2.4.2. Transportation System

The Transportation System includes a network of roads, highways, bikeways and trails, sidewalks, railways and supporting infrastructure that is owned and operated by various authorities, including the Federal Government, the Province, the County, local municipalities, public and private agencies.

The County recognizes the important role active transportation has in promoting opportunities for physical activity and cost effective travel for its residents and visitors alike.

The Middlesex County Official Plan supports and underpins the Middlesex County Cycling Strategy.

2.4.2.1 Transportation Hierarchy

All roads within the County can be classified as follows:

- Provincial freeways and highways;
- County roads;
- Municipal roads; and
- Private roads

[...]

b) County Roads

[...] The County Road Network, as shown on Schedule 'B', provides for the efficient movement of traffic between provincial freeways and highways and municipal roads throughout the County and to surrounding Municipalities. There is a need to plan the transportation system, including the County Road Network in order to protect rights-of-way for future improvements and to recognize that there is a strong relationship between transportation and built form.

County roads generally function as arterial or collector roads and direct private access is controlled through By-law #5783, as amended, for the County of Middlesex. [...]

c) Municipal Roads

Municipal roads are under the jurisdiction of local municipalities. Based on the volumes, types and nature of the traffic, municipal roads may be classified as arterial, collector or local roads in the official plan of a local municipality.

PHASE 1: NEEDS AND OPPORTUNITIES

Transportation policies should be included in local official plans to protect the integrity of the transportation system and should reflect the goals and policies noted herein.[...]

2.4.2.2 General Policies

The County shall:

- a) Minimize conflict between local and non-local traffic by defining a hierarchy of roads within the County [...];
 - b) Allocate resources to ensure the transportation system meets the needs of all road users and growth policies of the County;
 - c) Encourage integration of transportation infrastructure provided by local municipalities, adjacent municipalities and the Province;
 - d) Encourage the development and maintenance of an integrated transportation system that supports a variety of safe, sustainable and energy-efficient modes of transportation;
 - e) Review transportation corridors [...] to determine if a change in classification is necessary. [...]
 - f) Encourage safe, convenient and visually appealing pedestrian and cycling infrastructure for all ages and abilities;
 - g) Limit direct vehicular access to County roads where access is available by a local road;
- [...]
- j) Encourage the preservation and reuse of abandoned railway corridors [...];
 - k) Ensure where possible, compatible land uses adjacent to railway corridors and rail terminal facilities [...];
 - l) Address the matter of cross boundary traffic ... by establishing a planned network of roads which considers and coordinates the road hierarchy across municipal boundaries;

PHASE 1: NEEDS AND OPPORTUNITIES

- m) Encourage consideration for accommodating the movement of agricultural equipment ...
- n) Implement the recommendations of the Middlesex County Cycling Strategy
- o) Encourage greater electric vehicle usage through the provision of ... charging infrastructure.

Middlesex Centre Policies and Plans

Official Plan of the Municipality of Middlesex Centre

The Official Plan outlines a series of overarching policies and policies related to specific components of the transportation system, with selected highlights of notable relevance to the TMP as listed below.

Section 1.7 Municipal General Principles – Traditional Town and Country Planning in Middlesex Centre:

- b) To promote and protect the predominately agricultural character and economy of the Municipality by ensuring the continued viability of agricultural resource areas, the agricultural industry, and agricultural communities in the Municipality. This will be accomplished in part through the minimization of land use conflicts and the prevention of non-agricultural urban uses outside of settlement areas
- c) To establish a clear separation of “town” and “country” through the establishment of defined settlement area edges, and the discouragement of urban uses “blending into” rural or agricultural areas on the edge of settlements.
- f) To manage growth and change in an appropriate manner and in appropriate locations, with the intent of maintaining the positive physical character and attributes that Municipal residents currently enjoy.
- l) To encourage settlement design, including the lay-out of streets, in a manner that is in keeping with the traditional or historic urban form of existing settlement areas. Street patterns that disrupt or are not in character

PHASE 1: NEEDS AND OPPORTUNITIES

with existing settlement street patterns, will be discouraged. New neighbourhood development is encouraged to maintain and continue traditional settlement area patterns, and provide a high level of street and pedestrian connectivity within settlements to facilitate walkability and a highly connected village pattern.

s) To provide an efficient and safe transportation network facilitating all forms of movement through and within the Municipality, including pedestrian and cycling movement wherever possible and appropriate within settlement areas.

Section 5.0 Settlement Area Policies and Land Use Designations:

The Growth Management Hierarchy in Middlesex Centre, consistent with the County Official Plan, consists of the following settlement areas:

- Urban Settlement Areas (Ilderton, Komoka-Kilworth);
- Community Settlement (Areas Arva, Delaware); and
- Hamlet Settlement Areas (Ballymote, Birr, Bryanston, Denfield, Lobo, Melrose, Poplar Hill-Coldstream).

Section 5.3.1 General Village Centre Goals:

- a) To facilitate the continued health, use and awareness of Village Centres by settlement and surrounding agricultural residents, and to promote their role as a community gathering place.
- d) To encourage ease of access to Village Centres through multiple travel options, including pedestrian and cycling traffic, and to encourage compatible integration of residential uses, including residences above shops.
- e) To establish or strengthen linkages between Village Centres, and the tourism industry within the Municipality.

Section 5.3.2 Village Centre Policies:

- g) Parking within Village Centres will be provided in the context of new development. Cash-in-lieu of parking may be collected by the municipality to facilitate the establishment of appropriately located municipal parking. All parking will be designed and landscaped to de-emphasize its effect on the physical appearance

PHASE 1: NEEDS AND OPPORTUNITIES

Section 9.4.2 Municipal Transportation Structure:

Existing roads within the Municipality are separated into Provincial highways, County roads, and Municipal roads. [...] Within settlement areas, Municipal roads may be further defined into arterial streets, collector streets and local streets. Regardless of further classification, Municipal roads are intended to carry low volumes of traffic, and provide access to abutting properties.

Section 9.4.6 Policies for Multi-Use Trails:

a.i) Destinations/Connectivity – In addition to providing leisure opportunities, trails serve utilitarian purposes that link users with destinations, encouraging active transportation choices. Trails should connect users between origins and a variety of key destinations, which may include, but not be limited to, commercial shopping centres, community facilities, parks, and schools, among others.

a.ii) Safety – The identification of trail routes that are safe for users and minimize risk is a key consideration as a strong relationship exists between usage and a user's perception of safety. Generally speaking, trails will be used more frequently if users feel safe on them. Trail safety can be largely achieved by removing users from the road, whether through the provision of a designated shoulder or pathway, or physically separating the user from the right-of-way with a barrier or off-road trail route. [...]

a.ix) Partnership Opportunities – Community partners should be engaged to assist in the development and/or maintenance of municipal trail routes. Coordination with the County and adjacent municipalities will also be required to enhance trail connections between communities.

b.v) Expansion of the multi-use trail network is anticipated through the land development process. To resolve critical gaps in the trail system, the Municipality may consider other means of securing access, such as through the use of public parks, abandoned rail lines, utility corridors, unopened road allowances and other rights-of-way, land purchases, leases, easements, agreements and any other applicable means.

PHASE 1: NEEDS AND OPPORTUNITIES

b.viii) The Municipality shall continue to promote the social and environmental benefits of multi-use trails.

b.ix) The Municipality shall support and encourage active transportation for a range of users and abilities through new multi-use trail development and related infrastructure as opportunities arise and where resources exist.

Appendix B:

Review of Top Collision Locations

Review of Top Collision Locations

The following is a review of the top ten collision locations involving Middlesex Centre roads, based on 2012-2016 data:

- Rank 1: Coldstream Road and Oxbow Drive (21 collisions)
- Rank 1: Denfield Road and Medway Road (21 collisions)
- Rank 3: Amiens Road and Ilderton Road (13 collisions)
- Rank 4: Glendon Drive (CR 14) and Old River Road (10 collisions)
- Rank 5: Carriage Road and Gideon Drive (CR 3) (8 collisions)
- Rank 5: Nairn Road (CR 17) and Oxbow Drive (8 collisions)
- Rank 7: Adelaide Street N and Thirteen Mile Road (7 collisions)
- Rank 7: Adelaide Street N and Twelve Mile Road (7 collisions)
- Rank 7: Hyde Park Road and Fourteen Mile Road (7 collisions)
- Rank 7: Hyde Park Road and Thirteen Mile Road (7 collisions)

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 1: Coldstream Road and Oxbow Drive (21 collisions)



Map data: Google ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies

Collision types:

- 48% wildlife-related
- 24% other single-vehicle
- 29% multi-vehicle.

Stop control: 2-way stop on Coldstream Rd

No street lighting

Daily Traffic:

- Oxbow west side: 2,500
- Oxbow east side: 2,200
- Coldstream south side: 1,500
- Coldstream north side: 860

Trees on northeast side of Oxbow Rd and southwest side of Coldstream may have limited visibility of approaching vehicles and of deer/wildlife in the past but have been cut back in recent years.

Recommendations/Considerations:

Larger stop signs and adding stop bar pavement markings can help improve conditions to reduce T-bone collisions.

Adding fencing and deer signage can help reduce chances of deer collisions as animals are obstructed and drivers are notified and aware. Some trees have been cut down lately, however, and this can help with reducing such types of collisions.

Coldstream south approach, and Oxbow in both directions do not seem to have forgiving shoulders. At times, there may also be slightly steep slopes beside the roadway. These two factors combined may be causing single vehicle collisions.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 1: Denfield Road and Medway Road (21 collisions)



Map data: Google ©2023 CNES / Airbus, City of London First Base Solutions, Maxar Technologies

Collision types:

- 57% wildlife-related
- 14% other single-vehicle
- 29% multi-vehicle.

Stop control: 2-way stop on Denfield Rd

No street lighting

Daily Traffic:

Medway west approach: 1,600

Medway east approach: 1,700

Denfield north approach: 240

Denfield south approach: 230

All roads are paved with the exception of Denfield Road north approach. There are agricultural land use on all four corners.

Recommendations/Considerations:

Adding stop bars at stop signs is encouraged.

Adding fencing (similar to what is currently present at the intersection's southwest quadrant) and deer signage can help reduce chances of deer collisions as animals are obstructed and drivers are notified and aware.

Pavement markings including centreline marking along Denfield are encouraged to reduce chances of head-on collision.

More forgiving shoulders may be needed at times along Denfield to avoid possibility of drivers veering off road and causing single vehicle collision.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 3: Amiens Road and Ilderton Road (13 collisions)



Map data: Google ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies

Collision types:

- 92% wildlife-related
- 8% other single-vehicle
- 0% multi-vehicle

Stop control: Stop sign on Ilderton Road

No street lighting

Daily Traffic:

Ilderton Rd: 2,200

Amiens Rd: not available (930 south of Lamont Dr)

The northern approach of Amiens Rd was gravel until recent years, but all approaches are currently paved. The driveway located almost directly opposite Ilderton Rd does not follow design standards.

Wildlife-related incidents represent the vast majority of collisions at this location (92%). The southeast corner has a thick woodlot (with a creek) that would be very attractive to wildlife; the woodlot is about 2 m from the edge of Ilderton Rd and 5 m from Amiens Rod. These conditions would make it very difficult to see wildlife in the vicinity of the roadway.

Buildings to the north and trees to the east of the intersection may limit visibility of approaching vehicles and of wildlife.

Recommendations/Considerations:

Adding stop bar at stop sign is encouraged.

As most reported collisions are caused by deer collisions, adding fencing and deer signage would be encouraged to help reduce chances of deer collisions as animals are obstructed and drivers are notified and aware.

Rank 4: Glendon Drive (CR 14) and Old River Road (10 collisions)



Map data: Google ©2023 CNES / Airbus, City of London, First Base Solutions, Maxar Technologies

Collision types:

- 10% wildlife-related
- 70% other single-vehicle
- 20% multi-vehicle

Stop control: Stop sign on Old River Road

No street lighting

Daily Traffic:

Glendon: 14,500

Old River north approach: 1,600

Approach from Old River Road is uphill, and Glendon Drive is on a slope. Old River Road meets Glendon Drive at approximately a 45-degree angle. Trees to the east of Old River Road may limit visibility of approaching vehicles.

Recommendations/Considerations:

While Middlesex County’s Glendon Drive Environmental Assessment (Section 7.5.1) includes improvements at this intersection, nearer-term improvements can be considered.

Adding stop bar at stop sign is encouraged.

Most reported collisions at this location consist of single-vehicle collisions. Some collisions appear to be involving the steel beam guide rail. A westbound right-turning movement that is less sharp as well as a smoother road geometry for southbound vehicles may help lessen single-vehicle collisions.

The Glendon Drive Environmental Assessment includes realigning Old River Road to meet Glendon Road at a more westerly location, allowing for improved sightlines and providing space for an eastbound left-turn lane and westbound right-turn taper. The plan also reduces through traffic on Old River Road by restricting access at Pulham Rd via an emergency-use-only gate.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 5: Carriage Road and Gideon Drive (CR 3) (8 collisions)



Map data: Google ©2023 CNES / Airbus, City of London, First Base Solutions, Maxar Technologies

Collision types:

- 75% wildlife-related
- 25% other single-vehicle
- 0% multi-vehicle

Stop control: Stop sign on Carriage Road.

Gideon road westbound lane widens at approach but does not have turn-lane marking; eastbound has slight widening for a right-turn taper, also not marked as a separate lane

Daily Traffic:

Gideon Drive: 3,600

Carriage Road: 2,100

Wildlife-related incidents represent 75% of collisions at this location. The southeast corner has a thick woodlot within very close proximity of the intersection. North side has the Thames River and a park area, with trees/hedge very close to roadway east of intersection. The golf course on the southwest corner is lined with trees along the roadside. All conditions are attractive to wildlife but limit visibility of wildlife near the road.

Recommendations/Considerations:

Adding fencing and deer signage may help reduce chances of deer collisions at this location as animals are obstructed and drivers are notified and aware.

Adding a stop bar at the stop sign is encouraged.

Wider shoulders in the westbound direction at east approach and in the eastbound direction at west approach (right at the location of eastbound right-turning movement) may help reduce single-vehicle collisions.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 5: Nairn Road (CR 17) and Oxbow Drive (8 collisions)



Map data: Google ©2023 CNES / Airbus, City of London, First Base Solutions, Maxar Technologies

Collision types:

- 50% wildlife-related
- 38% other single-vehicle
- 13% multi-vehicle

Stop control: Two-way stop on Oxbow Dr

No street lighting

Daily Traffic:

Nairn Rd (CR 17): 5,500

Oxbow south approach: 2,200

Oxbow north approach: 1,400

Roads meet at approximately a 60-degree angle. Coupled with trees near the roadway on the north corner, visibility of Nairn Rd westerly at the north Oxbow approach is limited.

Woodlots on both sides of the south Oxbow approach, and a creek passing underneath the roadway, would attract wildlife, while very close-by trees limit their visibility to motorists.

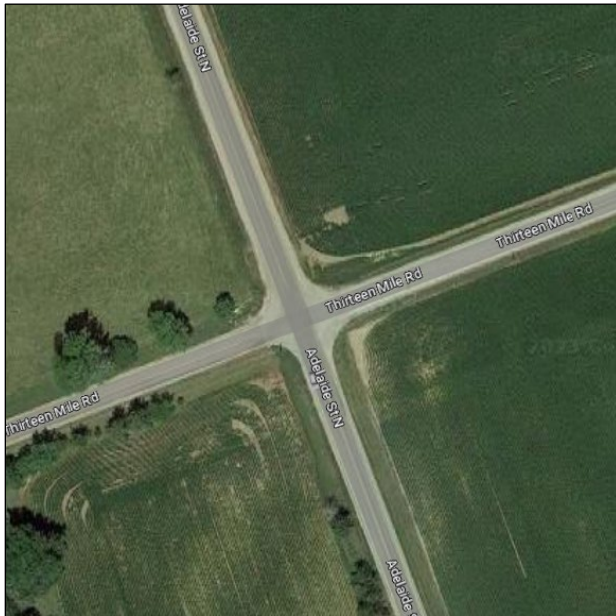
Recommendations/Considerations:

Adding fencing and deer signage may help reduce chances of deer collisions at this location, as animals are obstructed, and drivers are notified and aware.

Adding stop bars at stop signs is encouraged.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 7: Adelaide Street N and Thirteen Mile Road (7 collisions)



Map data: Google ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies

Collision types:

- 14% wildlife-related
- 57% other single-vehicle
- 29% multi-vehicle

Stop control: Two-way stop on Thirteen Mile Road

No street lighting

Daily Traffic:

Thirteen Mile west approach: 450

Thirteen Mile east approach: 310

Adelaide south approach: 5,300

Adelaide north approach: 4,700

This intersection is adjacent to the Adelaide Street N and Twelve Mile Rd intersection, with similar collision profile.

Terrain is flat with farmland along all four corners. While there are trees along the west approach Thirteen Mile Road, they do not limit visibility of approaching vehicles when stopped at the intersection. However, a thick tree hedge approximately 50 m south of the intersection on the west side of Adelaide affects visibility of oncoming northbound traffic along Adelaide.

Recommendations/Considerations:

Adding stop bars at stop signs is encouraged.

In the past, there were very narrow shoulder widths along the roadway edges – this may have contributed to single vehicle collisions. This has been improved recently, however.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 7: Adelaide Street N and Twelve Mile Road (7 collisions)



Map data: Google ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies

Collision types:

- 0% wildlife-related
- 100% other single-vehicle
- 0% multi-vehicle

Stop control: Two-way stop on Twelve Mile Road

No street lighting

Daily Traffic:

- Adelaide south approach: 5,300
- Adelaide north approach: 5,300
- Twelve Mile west approach: 260
- Twelve Mile east approach: 220

Twelve Mile Road is unpaved except for a paved apron at the intersection.

This intersection is adjacent to the Adelaide Street N and Thirteen Mile Rd intersection, with similar collision profile.

There is a treed yard with surrounding fence on the southeast side, and open farmland on the remaining three corners. The yard's trees along the south side of Adelaide limited the view of northbound traffic approaching the intersection along Adelaide, but have been trimmed back in recent years to mitigate this.

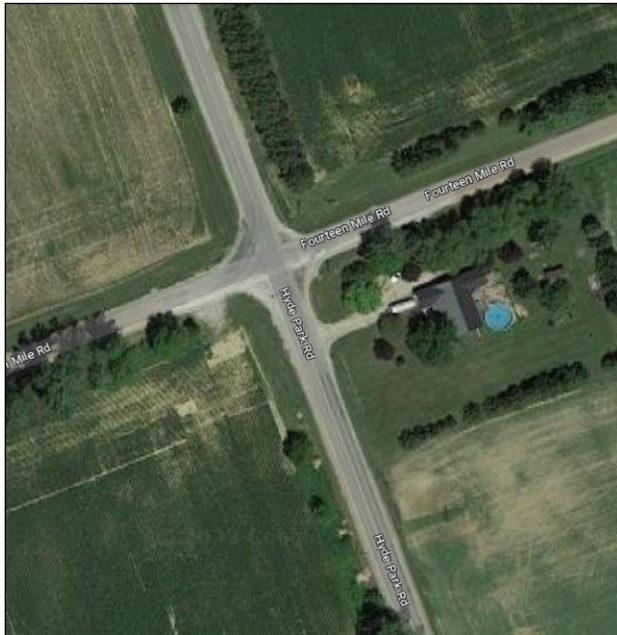
Recommendations/Considerations:

Adding stop bars at stop signs is encouraged.

All reported collisions at this location are single vehicle collisions. Road pavement conditions are not ideal on Adelaide. Roadway limits may be harder to distinguish in winter conditions with snow, due to the rural cross-section nature of the road as well as the crown with little slope.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 7: Hyde Park Road and Fourteen Mile Road (7 collisions)



Map data: Google ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies

Collision types:

- 0% wildlife-related
- 86% other single-vehicle
- 14% multi-vehicle.

Stop control: Two-way stop on Fourteen Mile Road

No street lighting

Daily Traffic:

Hyde Park south approach: 3,000

Hyde Park north approach: 2,800

Fourteen Mile west approach: 250

Fourteen Mile east approach: 180

Fourteen Mile Rd is unpaved except for a paved apron at the intersection.

An active grain silo/storage business is located to the northwest of the intersection on Fourteen Mile Rd.

Trees along the northeast side of Hyde Park Rd close to the intersection appear to have been cut back in recent years to improve visibility of southbound traffic from the westbound approach on Fourteen Mile Rd, though further trimming back would be beneficial. Trees along the west side of Hyde Park Road, while about 40 m from the intersection, may also limit visibility from the west approach of Fourteen Mile Rd.

Recommendations/Considerations:

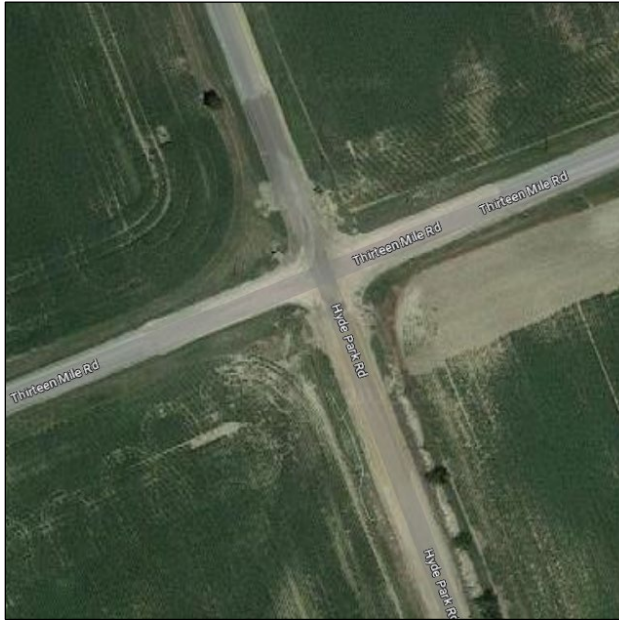
Adding stop bars at stop signs is encouraged.

Most reported collisions at this location are single vehicle collisions. Roadway limits may be harder to distinguish in winter conditions with snow, due to the rural cross-section nature of the road as well as the crown with little slope.

In the past, there were very narrow shoulder widths along the roadway edges – this may have contributed to single vehicle collisions. This has been improved recently, however.

PHASE 1: NEEDS AND OPPORTUNITIES

Rank 7: Hyde Park Road and Thirteen Mile Road (7 collisions)



Map data: Google ©2023 CNES / Airbus, First Base Solutions, Maxar Technologies

Collision types:

- 43% wildlife-related
- 43% other single-vehicle and
- 14% multi-vehicle.

Stop control: Two-way stop on Thirteen Mile Road

No street lighting

Daily Traffic:

Thirteen Mile west approach: 180
Thirteen Mile east approach: 280
Hyde Park south approach: 3,300
Hyde Park north approach: 3,000

All road approaches are paved.

All four corners have open fields with no trees or other items blocking the view at the intersections.

Recommendations/Considerations:

In the past, there were barely any shoulder widths along the roadway edges – this may have contributed to single vehicle collisions. This has been improved recently, however.

Also, although there are no large trees obstructing vision at this intersection at this time. If desired and still applicable however, adding fencing and deer signage may help reduce chances of deer collisions at this location as animals are obstructed and drivers are notified and aware.