



City of St. Thomas  
Official Plan Amendment No. 66 to the  
City of St. Thomas Official Plan

## **APPENDIX IX**

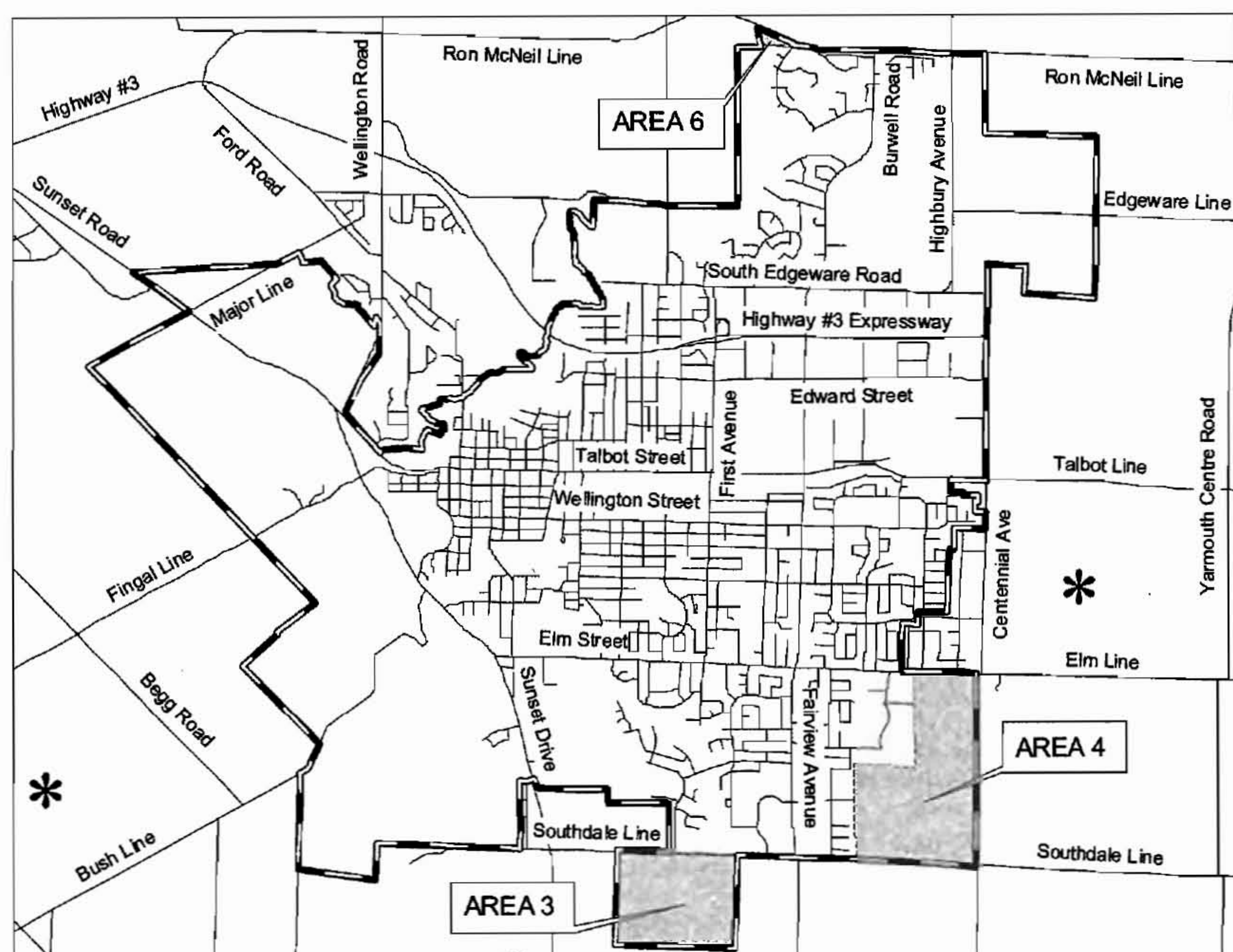
Urban Area Expansion Transportation Master Plan Dated  
December 2008 Prepared by Paradigm Transportation Solutions





187B-4E-C

# Urban Area Expansion Transportation Master Plan



Prepared For:  
City of St. Thomas

**Paradigm Transportation Solutions Ltd.**  
43 Forest Road  
Cambridge ON  
N1S 3B4

✉ [jmallett@ptsl.com](mailto:jmallett@ptsl.com)  
☎ 1.519.896.3163  
Fax: 1.866.722.5117





## PROJECT SUMMARY

PROJECT NAME: ..... TRANSPORTATION MASTER PLAN  
CITY OF ST. THOMAS  
URBAN AREA EXPANSION

CLIENT: ..... CITY OF ST. THOMAS  
545 TALBOT STREET  
P.O. BOX 520  
CITY HALL  
ST. THOMAS, ONTARIO N5P 3V7

CLIENT PROJECT MANAGER: ..... JOHN DEWANCKER, P.ENG.

CONSULTANT: ..... PARADIGM TRANSPORTATION SOLUTIONS LIMITED  
43 FOREST ROAD  
CAMBRIDGE ON N1S 3B4  
PH: 519-896-3163  
FAX: 1-866-722-5117

CONSULTANT PROJECT MANAGER ..... PHIL GRUBB, B.A.Sc., P.ENG.

REPORT DATE: ..... DECEMBER 2008  
PROJECT NUMBER: ..... 070200





## EXECUTIVE SUMMARY

### CONTENT

Paradigm Transportation Solutions Ltd. was retained by the City of St. Thomas in conjunction with MM Dillon, IBI Group and Earth Tech to undertake infrastructure master plans for urban area residential expansion in the City. This report documents the analysis that provides for Phase 1 and 2 of the Class Environmental Assessment for transportation improvements required to support this expansion. The following report documents the existing conditions in the study area, the identified area growth, the anticipated future conditions as a result of this growth and the forecast transportation improvement needs to support build-out of the expansion areas.

The project was carried out in two key phases:

*Phase 1: Technical Analysis of Candidate Areas for Expansion* – Phase 1 involved a review of 6 possible expansion areas from a land use, natural heritage, wastewater and sanitary servicing, road and transit access and municipal finance perspective. Phase 1 concluded that Areas 3, 4 and 6 should be further studied (see Figure 1.1).

*Phase 2: Detailed Analysis of the Proposed Urban Area Residential Expansion* – Phase 2 involved the identification of infrastructure (water, sewer, transportation, transit) needed to service the expansion area (Areas 3, 4 and 6) and the preparation of plans to provide that service. Phase 2 also involved the preparation of a Subwatershed Plan. Work for each infrastructure component was done in accordance with the requirements of the Municipal Class Environmental Assessment.

This Transportation Master Plan is a comprehensive, long-range document outlining a long-term solution for the City of St. Thomas Urban Area Residential Expansion over the next 20 years. For the purpose of this Class EA Master Plan, the study area is the lands within the identified urban expansion areas (Areas 3, 4 and 6) as well as any additional lands within the City of St. Thomas where transportation infrastructure may be significantly affected.





# CONTENTS

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 BACKGROUND AND PURPOSE .....	1
<b>2.0 EXISTING CONDITIONS .....</b>	<b>2</b>
<b>2.0 EXISTING CONDITIONS .....</b>	<b>3</b>
2.1 ROAD NETWORK.....	3
2.2 TRAFFIC DEMANDS .....	3
2.3 EXISTING TRANSIT SERVICE .....	4
2.4 PEDESTRIANS AND CYCLISTS .....	4
<b>3.0 ASSESSMENT OF FUTURE TRAFFIC NEEDS .....</b>	<b>10</b>
3.1 PROPOSED EXPANSION AREAS .....	10
3.2 TRAFFIC FORECASTING .....	10
3.3 PROBLEM STATEMENT .....	13
<b>4.0 FUTURE PLANNING SOLUTIONS/IMPACTS .....</b>	<b>14</b>
4.1 EVALUATION OF ALTERNATIVE PLANNING SOLUTIONS .....	14
4.2 EVALUATION AND PLANNING OF PLANNING ALTERNATIVES.....	14
4.3 SOCIAL/CULTURAL/NATURAL ENVIRONMENT .....	15
<b>5.0 TRANSPORTATION MASTER PLAN .....</b>	<b>16</b>
5.1 NEW COLLECTOR ROADWAYS .....	16
AREA 3 .....	16
AREA 4 .....	16
ROUNDBABOUTS ON ARTERIALS .....	17
5.2 ROADWAY IMPROVEMENT PLAN (2028) .....	17
5.3 PUBLIC TRANSIT .....	21

# APPENDICES

## APPENDIX A – EXISTING ZONE SYSTEM

## APPENDIX B – POPULATION AND EMPLOYMENT FORECASTS





**FIGURES**

**FIGURE 1.1: PROPOSED URBAN RESIDENTIAL AREA EXPANSION ..... 2**

**FIGURE 2.1 MAJOR AREA ROAD NETWORK AND EXTERNAL DESTINATIONS ..... 6**

**FIGURE 2.2 GENERALIZED EXISTING DAILY TRAFFIC ..... 7**

**FIGURE 3.1: GROWTH AREA BUILD-OUT FUTURE DAILY TRAFFIC (VEHICLES PER DAY) ..... 11**

**FIGURE 3.1: FUTURE DAILY TRAFFIC (2028)..... 12**

**FIGURE 5.1: AREA 3 COLLECTOR ROAD NETWORK ..... 18**

**FIGURE 5.2: AREA 4 COLLECTOR ROAD NETWORK ..... 18**

**FIGURE 5.2: AREA 4 COLLECTOR ROAD NETWORK ..... 19**

**FIGURE 5.3: 2028 ROAD IMPROVEMENTS..... 19**

**FIGURE 5.3: 2028 ROAD IMPROVEMENTS..... 20**

**TABLES**

**TABLE 2.1: ROADWAY PLANNING CAPACITIES..... 3**

**TABLE 3.1: GROWTH AREA FORECASTS..... 10**

**TABLE 5.1: 2028 ROAD AND INTERSECTION IMPROVEMENTS ..... 21**





# 1.0 INTRODUCTION

## 1.1 Background and Purpose

Since spring 2007, the City of St. Thomas has been working on an integrated process to identify and service a proposed Urban Area Residential Expansion (UAE). The purpose of this initiative has been to update key background information such as population and employment projections, identify appropriate expansion area(s), and develop plans to provide transportation, transit, water and wastewater servicing to the proposed expansion area(s).

Paradigm Transportation Solutions Ltd. was retained by the City of St. Thomas in conjunction with MM Dillon, IBI Group and Earth Tech to undertake infrastructure master plans for urban area residential expansion in the City. This report documents the analysis that provides for Phase 1 and 2 of the Class Environmental Assessment for transportation improvements required to support this expansion. The following report documents the existing conditions in the study area, the identified area growth, the anticipated future conditions as a result of this growth and the forecast transportation improvement needs to support build-out of the expansion areas.

The project was carried out in two key phases:

*Phase 1: Technical Analysis of Candidate Areas for Expansion* – Phase 1 involved a review of 6 possible expansion areas from a land use, natural heritage, wastewater and sanitary servicing, road and transit access and municipal finance perspective. Phase 1 concluded that Areas 3, 4 and 6 should be further studied (see Figure 1.1).

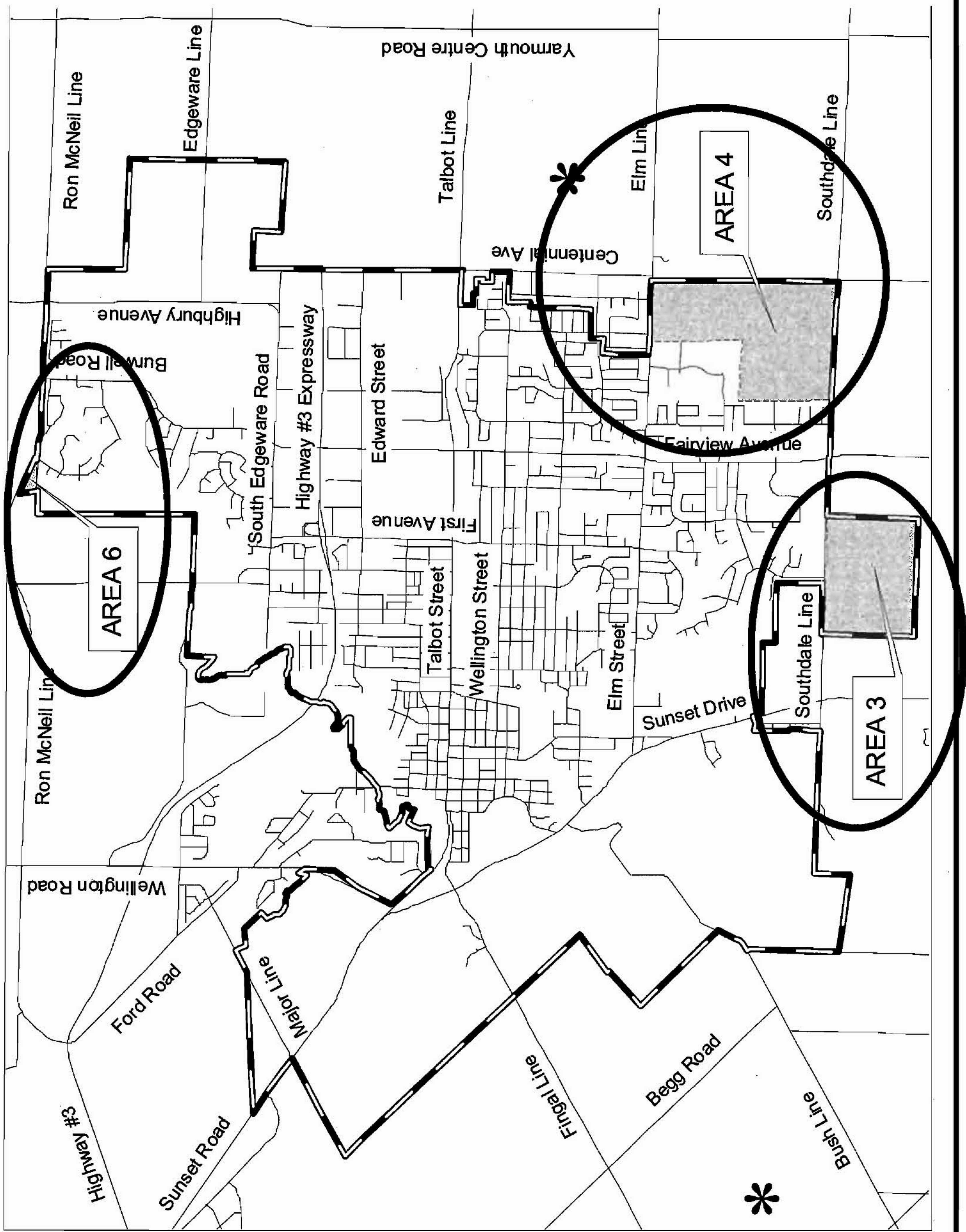
*Phase 2: Detailed Analysis of the Proposed Urban Area Residential Expansion* – Phase 2 involved the identification of infrastructure (water, sewer, transportation, transit) needed to service the expansion area (Areas 3, 4 and 6) and the preparation of plans to provide that service. Phase 2 also involved the preparation of a Subwatershed Plan. Work for each infrastructure component followed the principles of the Municipal Class Environmental Assessment.

This report should be read in conjunction with other component studies as follows:

1. Phase 1 Technical Analysis for the Proposed Urban Area Residential Expansion
2. Proposed Urban Expansion Area – Phase 2 Water Servicing Analysis
3. Transportation Master Plan – City of St. Thomas Urban Area Expansion
4. Proposed Urban Expansion Areas – Infrastructure Master Plan Sanitary Sewage Servicing
5. Mill Creek – South Block Area Subwatershed Study Addendum.
6. Urban Area Expansion- Transit Master Plan- Phase 2

These studies are intended to support an Official Plan Amendment to the City of St. Thomas Official Plan for the Urban Expansion Area as well as other initiatives where appropriate (e.g. City wide Development Charges By-law, South Block Area Development Charges By-Law).





Transportation - Urban Residential Expansion

Figure 11

Proposed Urban Area Residential Expansion







# 2.0 EXISTING CONDITIONS

This section documents current traffic conditions in the study area based on information provided by the City of St. Thomas and other members of the consulting team.

## 2.1 Road Network

Figure 2.1 illustrates the major arterial road network within St. Thomas and immediate surrounding areas. Key north-south roadways include Sunset Drive, 1<sup>st</sup> Avenue, Fairview Avenue/Burwell Road and Centennial Road. Key east-west roadways include Ron McNeil Line, the St. Thomas Expressway (Hwy. 3), Talbot Street, Wellington Street, Elm Street and Southdale Line.

Most of the arterial roadways within the City provide two lanes. Existing roadways in excess of two lanes include:

1. Talbot Street: Ross Street to East City Limits and from Stanley Street to West City Limits
2. Wellington Street: Fifth Street to First Avenue. Note that from First Avenue to Fairview it is 3 lanes.
3. Elm Street: 1<sup>st</sup> Avenue to Chant Street. East of Chant Street to Peach Tree Blvd. it has the equivalent width of three lanes.
4. Sunset Road: West of Wellington Road 25
5. 1<sup>st</sup> Avenue: north of Wellington Street (except at the CASO bridge)
6. Fairview Avenue: Talbot Street to Elm Street and a section of road in the vicinity of South Gate Parkway (with exception of the 2 lane CP underpass).

Schedule B of the City Official Plan illustrates a map of arterial, collector and local roadways within the City.

## 2.2 Traffic Demands

The City of St. Thomas provided daily traffic volume data for the arterial road network. The most recent generalized volumes are shown in Figure 2.2. The figure indicates that the highest daily volume occur on 1<sup>st</sup> Avenue at about 18000 vehicles per day. Wellington Street and Talbot Street have sections in the order of 13,000 vpd. Sunset Drive south of Elm Street has volumes in the order of 12,000 vehicles per day.

**TABLE 2.1: ROADWAY PLANNING CAPACITIES**

Functional Classification	Type	Vehicles per lane per hour	AADT 2-lane	AADT 4 lane
Freeway		1800	36000	72000
Freeway Ramps		1300	26000	52000
Highway	Rural	1000	20000	40000
Arterial	Major	800	16000	32000
	Minor	700	14000	28000
Collector	Major	500	10000	N/A
	Minor	400	8000	N/A
Local		300	6000	N/A





Two lane arterial roads can accommodate between 14,000 and 16,000 vehicles per day based on the 1997 Transportation Master Plan. In smaller urban areas the lower volume is more appropriate since higher levels of service are expected. However, there are several sections of arterial roads that have three lanes (centre turning lane) that could be assigned the 16,000 vpd capacity. Assuming a two lane road can accommodate in the order of 14,000 vehicles per day to provide an acceptable level of service in St. Thomas, Figure 2.3 indicates that the following roadways will soon be in need of widening to four lanes based on maintaining a v/c ratio of 0.9.

- ▶ Talbot Street from Inkerman to Ross.
- ▶ First Avenue from Talbot Street to Chestnut Street.
- ▶ Fairview Avenue from Elm Street to South Gate Parkway
- ▶ Wellington Street from Ross to 5<sup>th</sup> Avenue.

These improvements will be required based on existing conditions with anticipated generalized growth in the City.

## 2.3 Existing Transit Service

The public transit services provided by the City of St. Thomas consist of two components, namely:

- The conventional fixed route service operated under a private contractor, referred to as St Thomas Transit.
- A specialized public transportation service for persons unable to use the conventional public transit service due to disabilities. This service is operated by a private contractor and is referred to as St. Thomas Paratransit.

St. Thomas transit has four routes and four buses operating every 30 minutes during the following hours:

- 7:15 AM to 6:45 PM on Monday to Fridays.
- 9:15 AM to 6:45 PM on Saturdays
- No Sunday Service

The objective is to provide service within 300m walking distance in the community. The service covers 95% of the urban population with stops located every 250 to 300m. Shelters are provided at 10-20% of the stops. Fares are \$2.50 per trip and \$60 per month for a pass.

The St Thomas Paratransit service provides pre-booked door-to-door service in wheelchair accessible vans for registered clients. The service hours are:

- 7:15 AM to 6:45 PM Monday to Fridays.
- 9:15 AM to 6:45 PM on Saturdays

Two buses are in generally in operation during weekdays and one bus on Saturdays.

## 2.4 Pedestrians and Cyclists

The 1996 household travel survey indicated that about 22% of all trips during the PM peak hour were walk trips and about 4% consisted of bicycle trips. Walking is therefore an important mode of transportation in St. Thomas, not only for recreational purposes but for work and school trips. This importance is recognized by the City as sidewalks are encouraged on both sides of the street for all collector and arterial streets.





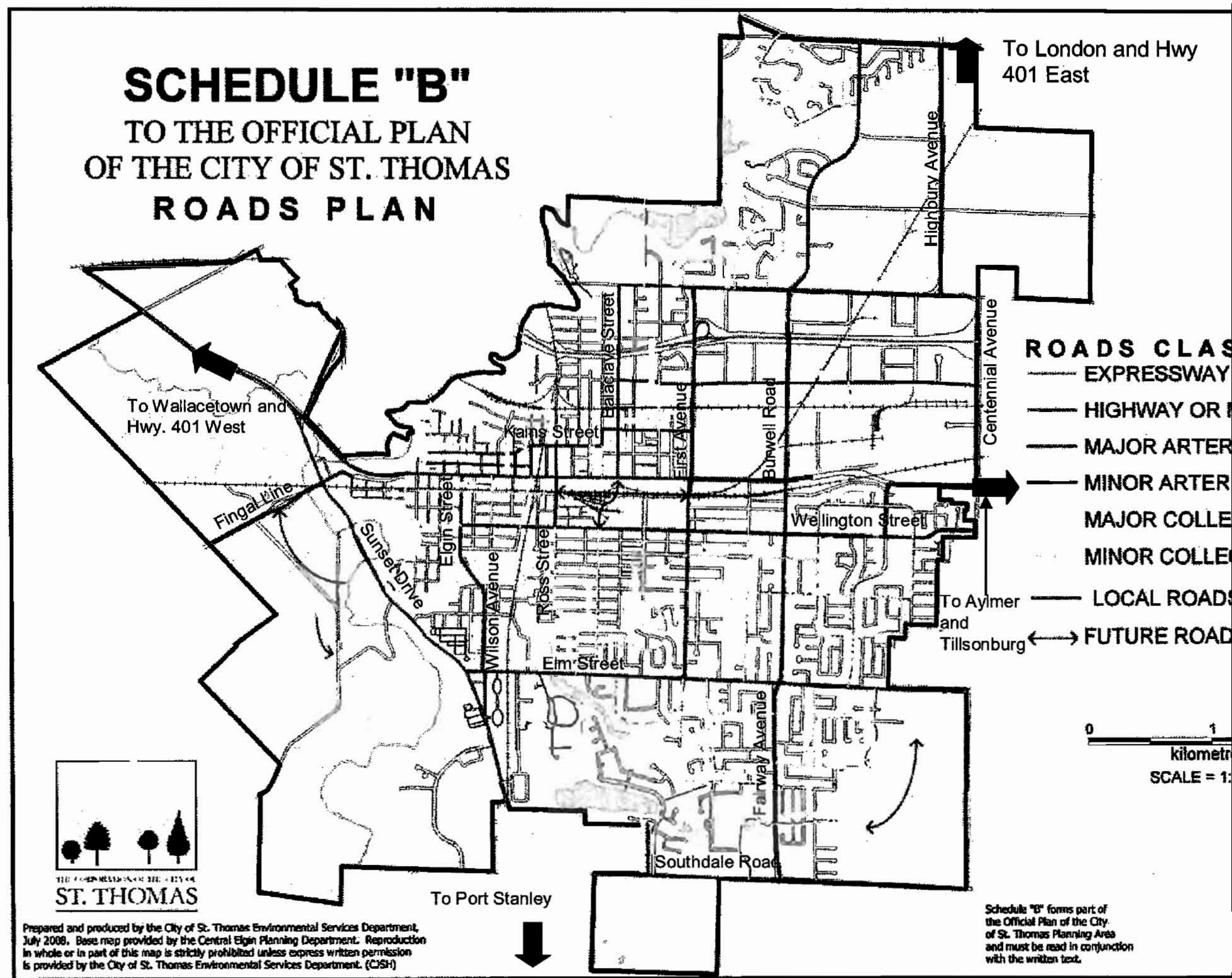
In developed residential areas, sidewalks and trail linkages are partially in place making walking a practical alternative for short distance trips. The arterial road network currently has incomplete and discontinuous sidewalks.

The City does have a plan for the establishment of a road cycling network. This network was established as part of the preparation of the City's Trails and Parks Master Plan which was approved during May 2008. This plan provides for on road cycling (bike lanes) to be provided on the following roads:

- ▶ Sunset Drive (west City limit to south City limit)
- ▶ Burwell Road (Ron McNeil Line to Talbot)
- ▶ Fairview Avenue (Talbot to Southdale Line)
- ▶ South Edgeware (Waterworks Park to Highbury)
- ▶ Highbury Avenue (South Edgeware to Edgeware Line)
- ▶ Elm Street (Sunset Drive to Centennial Avenue)

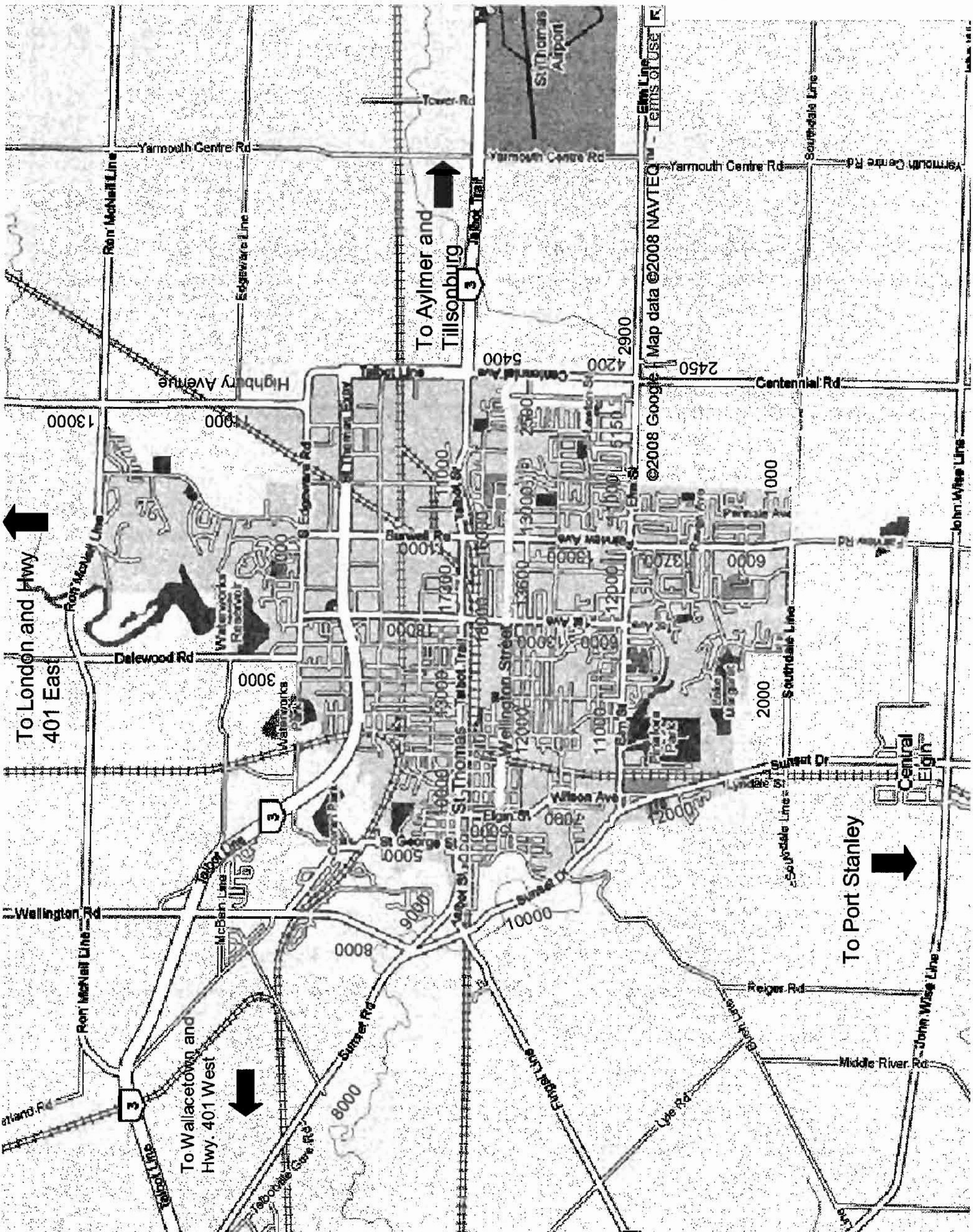
On road cycling lanes should desirably be 1.5 m in width with a minimum width of 1.25m. Off road recreational trails exist in Pinafore Park, Waterworks Park and the Dalewood Conservation Area.





Transportation -Urban Residential Expansion



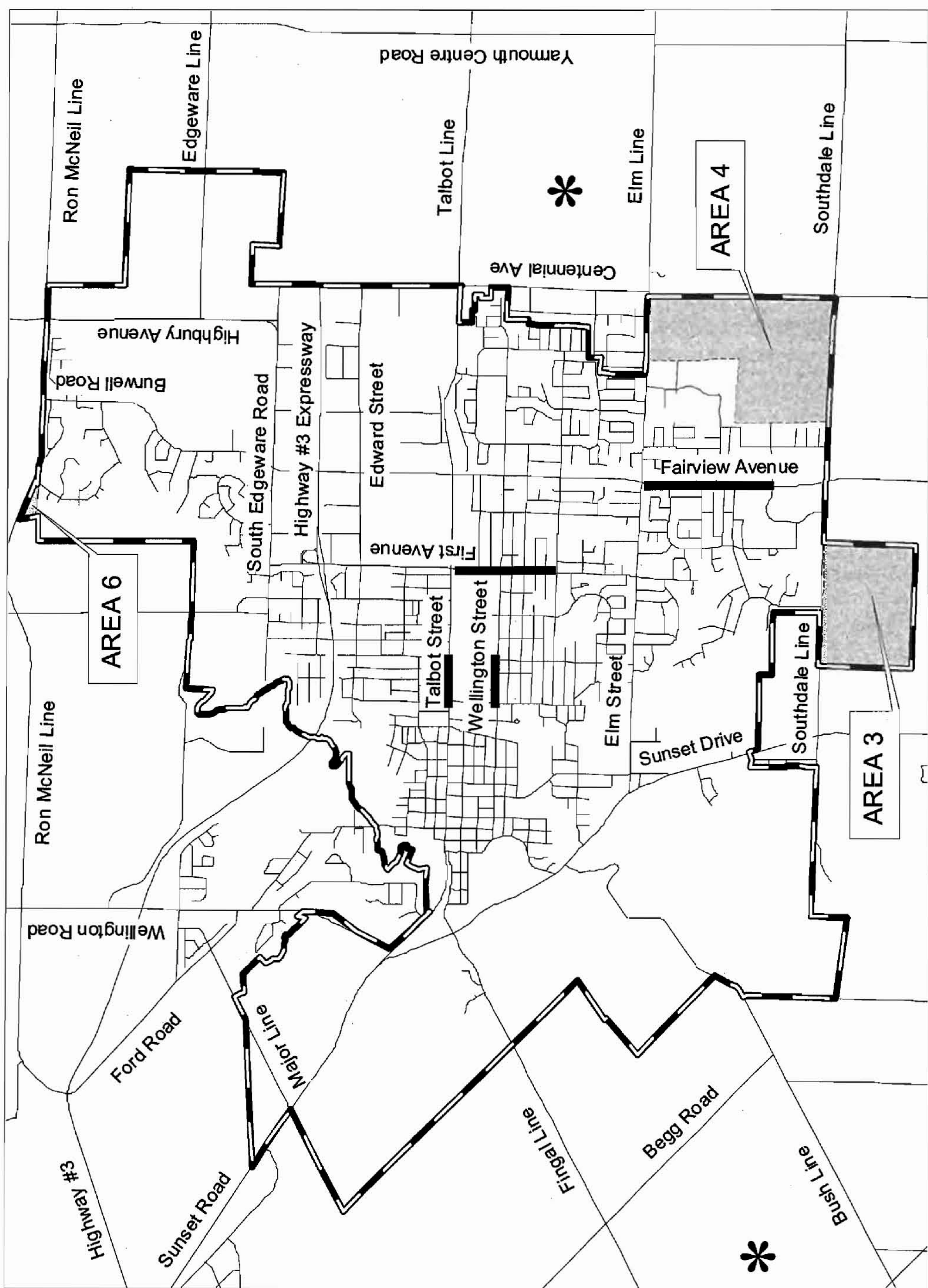


**Figure 2.2**  
**Generalized Existing Daily Volumes**

Transportation -Urban Residential Expansion







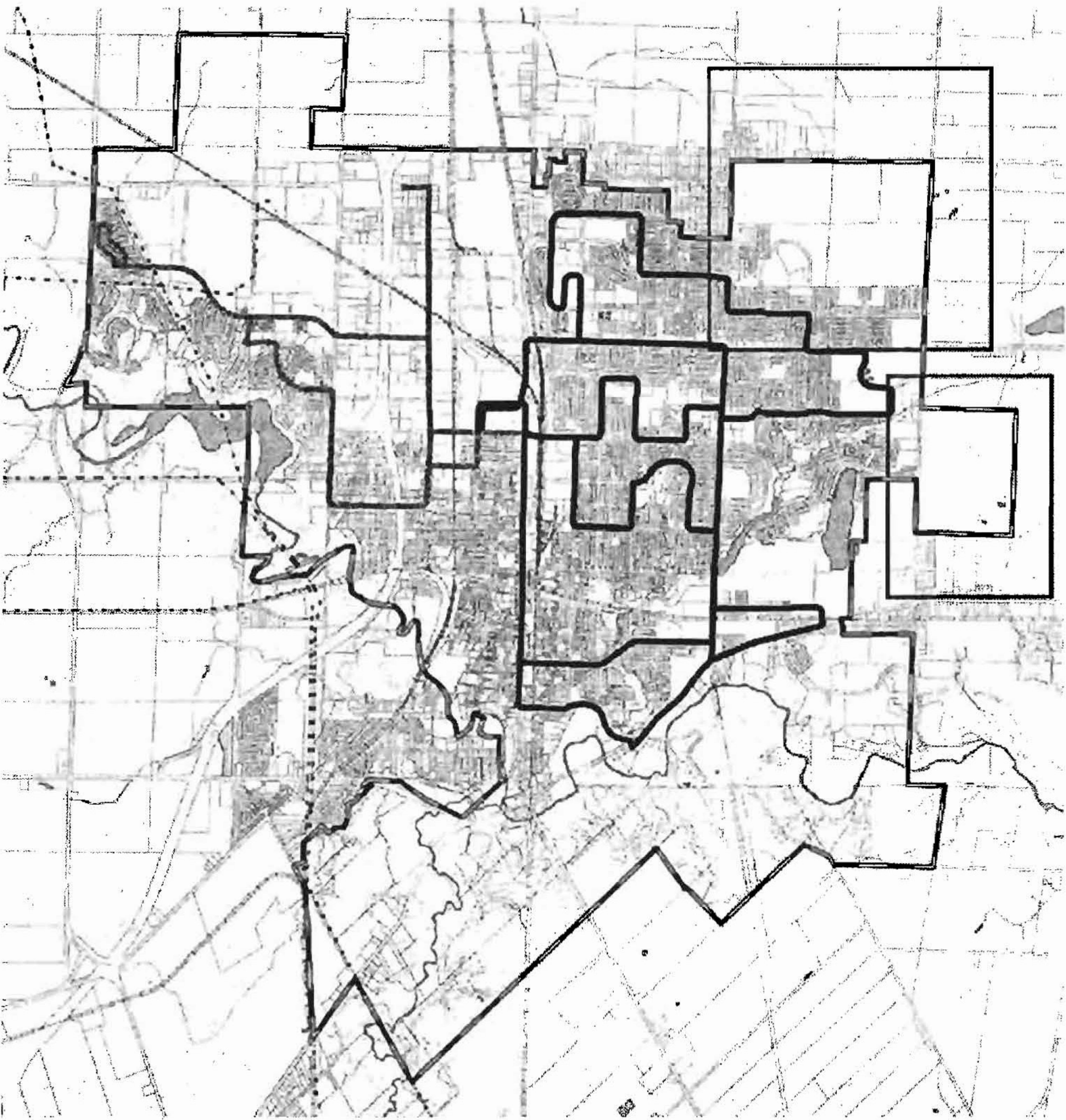
Transportation -Urban Residential Expansion

Figure 2.3

Roadways Approaching Capacity







**Figure 23**  
**Existing Transit System**

Transportation – Urban Residential Expansion







## 3.0 ASSESSMENT OF FUTURE TRAFFIC NEEDS

### 3.1 Proposed Expansion Areas

Estimates of future potential population within the proposed growth areas are as follow shown in Table 3.1. Based an approximate vehicle trip rate of 3 per person per day based on the 1996 Household Travel Survey, the areas could generate a total of about 22000 vehicle trips. This would most significantly impact the existing roadway network in the south part of the City.

**TABLE 3.1: GROWTH AREA FORECASTS**

Development Area	Dwelling Units	Estimated Population	Daily Vehicle Trips
Area 3	1194	2853	8559
Area 4	1826	4363	13089
Area 6	31	74	222
Total	3050	7290	21870

### 3.2 Traffic Forecasting

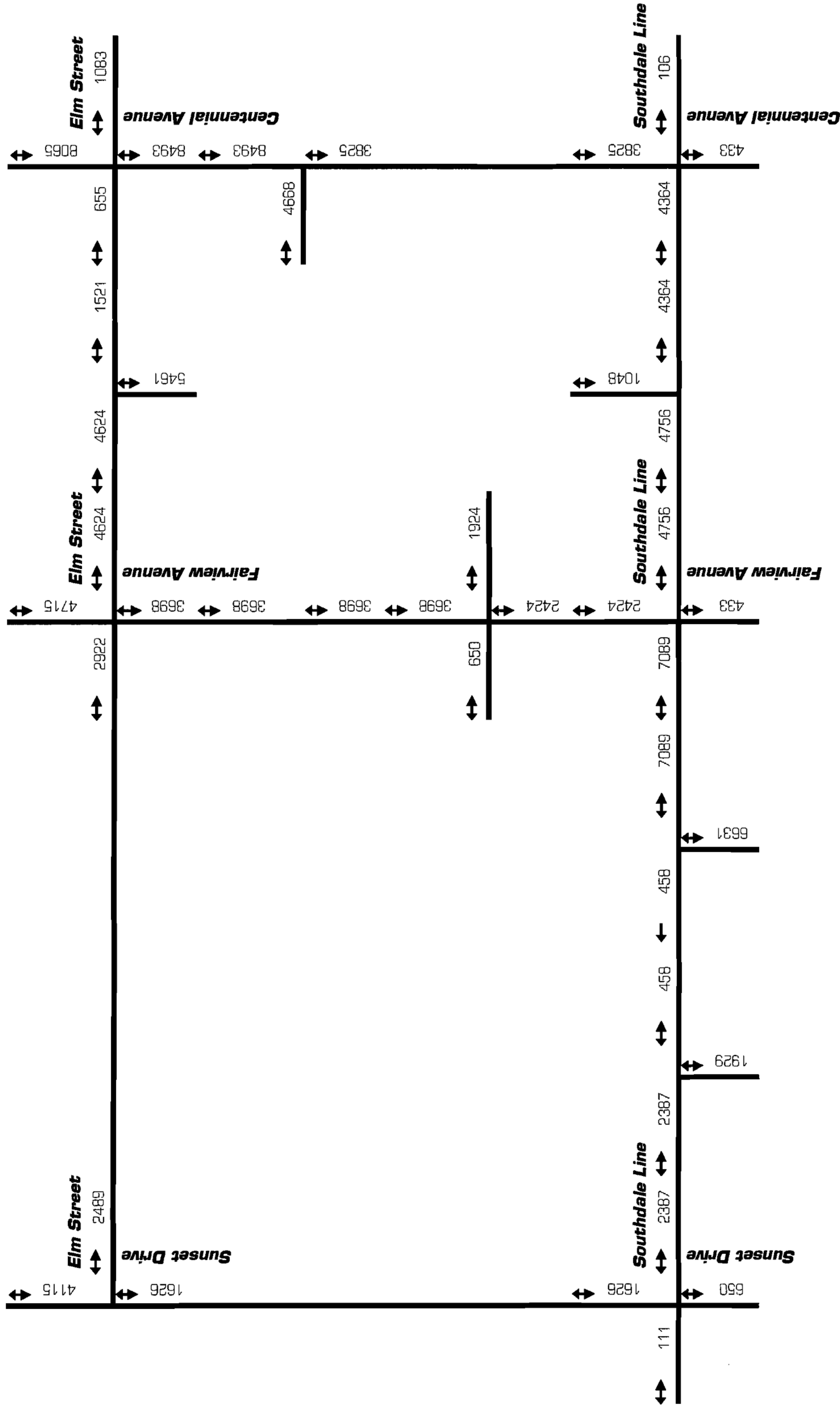
The City of St. Thomas provided population and employment forecasts for the 224 zone system used in the City of St. Thomas transportation forecasting model. These forecasts indicate a 24% growth in population between 2006 and 2028 and a 35% growth in employment over that same time period.

The traffic forecasts from the new growth areas were developed based on the following process:

1. Background traffic growth was estimated based on the growth in population and employment in the city excluding the additional population in the new growth areas. This resulted in a net increase of 33% to the existing volumes on the road network by 2028.
2. The traffic generation was estimated on an average daily basis using Table 3.1 above.
3. The traffic distribution from the residential growth areas was determined based on the distribution of employment. The 1996 household survey indicated that about 34% of the PM peak period trips were external to the community so this proportion of traffic was assigned to the roadway links exiting the community. The remaining trips were assigned to internal zones. As most of the employment is in the northeast part of the City, much of the travel demand is oriented in this direction.
4. The assignment of traffic was based on the most direct routing considering that roadway links within the heart of the city will have greater delays due to traffic signals and traffic congestion. This placed greater emphasis on Centennial Avenue which has low traffic volumes and relatively free flow movements. As well, collector connections to each of Centennial Avenue, Fairview Avenue and Southdale Line were assumed for Area 4 and two connections to Southdale Line were assumed for Area 3.

The results of the travel demand forecasts are shown in Figure 3.1 indicating the future travel demand forecasts from build-out of the growth areas on the various roadway links in the south part of the City where the primary traffic impacts will occur. Figure 3.2 shows the future traffic with the growth area traffic in addition to background traffic forecasts.





## Figure 3.1

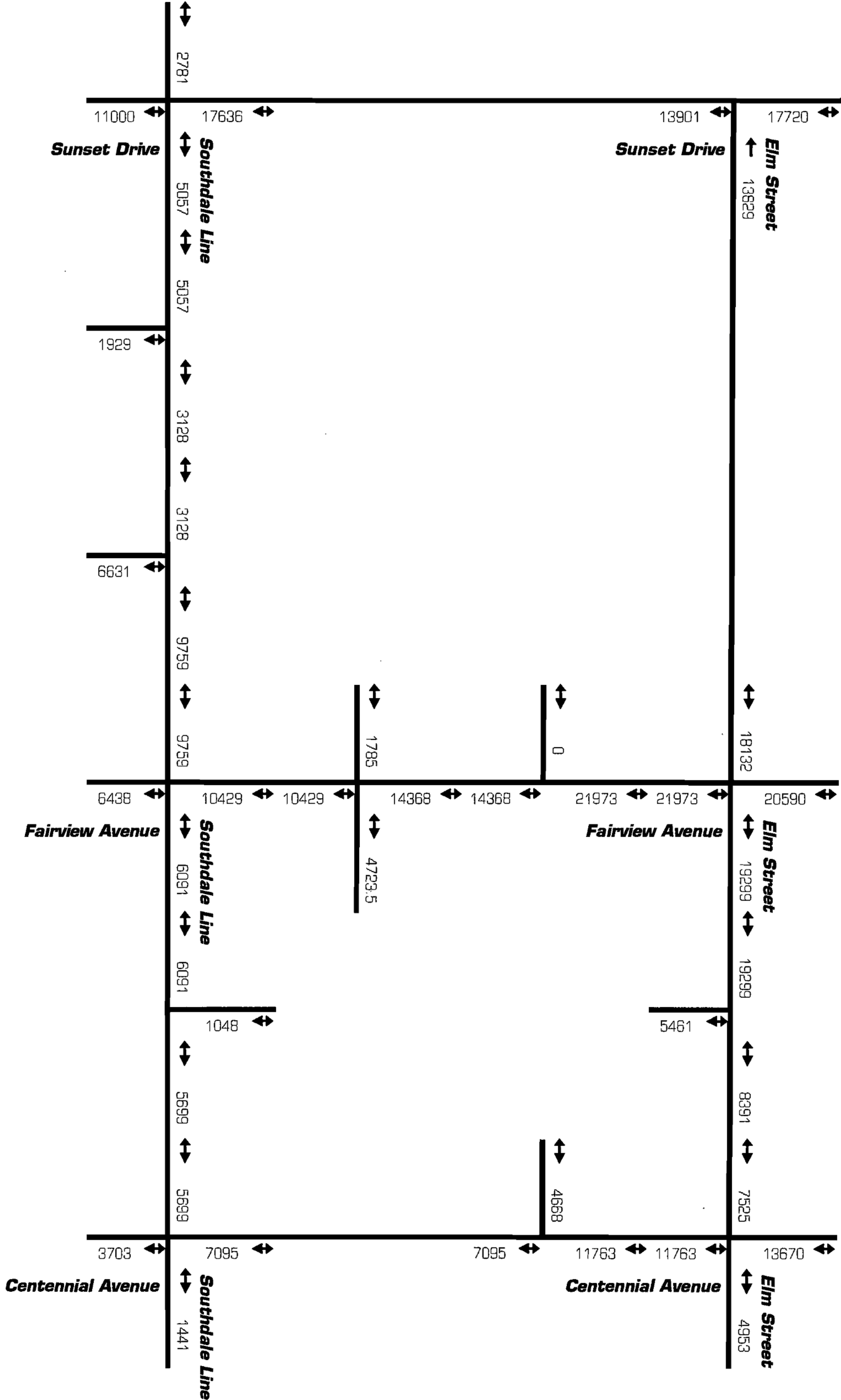
Transportation -Urban Residential Expansion



**Paradigm**  
www.ptsl.com

## Growth Area Build-out Future Daily Traffic





Transportation –Urban Residential Expansion



www.ptsl.com

**Figure 3.2**  
**Future Daily Traffic (2028)**





### 3.3 Problem Statement

Build-out of the growth areas (Figure 3.1) will attract much of the future traffic to Centennial Avenue given that this roadway is located in close proximity to Area 4 and given it provides the least delay for north-south travel for employment and shopping trips in the central easterly part of the City and external areas east and north. Growth area traffic on Southdale Line will range from 500 to 7000 vpd. Fairview Avenue is expected to be less attractive than Centennial Avenue accommodating approximately 5000 vehicles per day. Growth area traffic on Elm Street is expected to range from 600 to 4600 vpd.

Figure 3.2 shows the future total traffic based on background growth and the addition of build-out of the growth areas indicating that volumes on Fairview Avenue north of South Gate Parkway are expected to range from over 14,000 to 22,000 vehicles per day. This will require expansion of this roadway to 4 lanes in order to accommodate the projected traffic volumes. Sunset Drive future traffic is expected to be just less than 18,000 vehicles per day requiring expansion of this roadway to four lanes. The sections of Elm Street where volumes exceed 18,000 vehicles per day currently have four lanes so the projected traffic can be accommodated. Two lanes are sufficient to accommodate traffic volumes on Centennial Avenue and Southdale Line. However, it would be desirable to align the off-set intersection of Centennial Avenue at Elm Street. In addition the new growth area will require new local and collector roads to provide access to the residential units and the arterial road network.

The traffic forecasts indicate a need for increased north south roadway capacity to accommodate build-out of the future growth areas. However, other than those roadways highlighted in Figure 2.3, this need will not occur immediately as build-out will occur over several years.





## 4.0 FUTURE PLANNING SOLUTIONS/IMPACTS

### 4.1 Evaluation of Alternative Planning Solutions

The Class Environmental Assessment Process for Municipal Roads in Ontario requires consideration and evaluation of broad planning alternatives in determining a preferred solution to the problem of accommodating future travel demands on Fairview Avenue and Sunset Drive and providing access to the new residential areas. The following broad planning concepts and alternatives were considered as possible approaches to accommodate future travel demands.

1. **Do-Nothing:** This is always an alternative within the Class Environmental Assessment Process and it forms the baseline upon which other alternatives are evaluated.
2. **Improve Existing Roads:** The improvement of existing roads is one generic option to consider. This would involve the provision of more travel lanes on Fairview Avenue and Sunset Drive to accommodate vehicles such as passenger cars, trucks and buses, bicycle lanes and sidewalks to help address growing travel demands, reduce existing congestion and accommodate alternative modes.
3. **Traffic Diversion to Existing Roadways:** This alternative would require the diversion of traffic to other alternative routes such as Centennial Avenue which has additional capacity to accommodate north south travel demands.
4. **New Roads:** A new road to accommodate increase north/south capacity could be considered. There are no other alternatives within the designated growth areas as collector and local roads are required to provide access.
5. **Non Structural Alternatives:** These alternatives include a wide range of actions geared towards reducing the need for travel, diverting trips from the automobile to alternative modes, reducing the number of single occupant vehicles by increasing ride sharing and/or shifting the time of travel away from peak hours. It includes improving the infrastructure/facilities and programs to make it easier, less costly and more attractive to use public transit or to walk or cycle rather than drive. It also can include initiatives to discourage auto use by reducing the supply and increasing the price of long term parking, restricting automobile travel in certain areas or increasing the cost of driving through gasoline taxes or the use of toll roads. Also included in this category is to locate employment land uses within the growth areas so that home to work or shop trips are shorter and can be accommodated by alternative modes to the auto and that trips outside the growth areas can be reduced.

### 4.2 Evaluation and Planning of Planning Alternatives

The do-nothing alternative will not address the problem of increased north south travel demands on Fairview Avenue. This alternative would cause traffic congestion on Fairview Avenue as volumes would exceed the capacity of this road. Furthermore, increased traffic demands will occur along local streets in the area exacerbating existing neighbourhood short-cut traffic issues. Increased emission levels and fuel consumption along with issues associated with the efficient provision of emergency services and public transit occur. As well, development cannot occur without local and collector roads within the new growth areas.

The traffic diversion alternative is problematic as it cannot be effectively done completely. One method to assist in diverting traffic to Centennial Avenue would be to not provide collector connections to Southdale Line and Fairview Avenue. However, this alternative would not maintain connectivity between the existing Southgate neighbourhood and the new growth area which is an important community planning objective. It would also complicate the provision of transit service and road maintenance as these services will be more inefficient. In addition, the existing traffic volumes exceeds the capacity of a two lane roadway and is





expected to further exceed capacity with increased background traffic growth even with the diversion of growth area traffic. The diversion of growth area traffic to Centennial Avenue may cause this roadway to exceed its capacity.

Providing a new arterial road is not a practical solution given that the capacity is required within a built-up urban environment. The social and financial impacts would be substantial. However, there are no other alternatives to a new road within the designated growth areas as collector and local roads are required to provide access.

Non-structural solutions involving increased use of alternative modes to the automobile are currently being encouraged by the City through improvements in providing public transit service and implementation of more bicycle and pedestrian linkages. This will be difficult to achieve and will not significantly reduce the future traffic demands on existing streets. In addition, walking and cycling are only reasonable alternatives for shorter distance travel and car pooling requires the cooperation of a significant number of employers and employees to be an effective alternative. There is currently no proven Canadian experience that transportation demand management initiatives in smaller cities such as St. Thomas or for that matter in larger urban areas that non-structural solutions can significantly reduce future traffic demands to the degree necessary to eliminate the need to improve north-south traffic capacity.

Given the above rationale and consistent with the recommendations of the City of St. Thomas Transportation Plan Update, it was determined that the most effective solutions would involve the widening of Fairview Avenue and as well, Sunset Drive south of Elm Street. With the significant increase in traffic as well as pedestrian and cycling activity on Southdale Line, reconstruction and urbanization of this roadway is required in the future. In addition, new collector roads will be required within the growth areas to provide access to future residential development.

#### **4.3 Social/Cultural/Natural Environment**

The growth areas themselves are generally agricultural in nature with limited significant natural environment features save and except for some treed areas that are expected to be maintained.

Fairview Avenue south of Elm Street currently has a right of way of 30m which is adequate to provide for a 4 lane arterial urban standard roadway with curbs, sidewalks and bicycle lanes. The adjacent land use is back lotted low density residential development with some institutional uses south of Axford Parkway. This type of development is typically adjacent to arterial roadways.

Sunset Drive currently has 30m right of way south of Glenwood Drive. To the north it has widths varying from 24m to 30m. It has primary front lotted residential development. Some road widening may be required to expand this roadway to four lanes. This widening will impact on adjacent residential lots by reducing the front yard space. The requirements and details of this will be required as part of Phase 3 and Phase 4 of a future Environmental Assessment.

Noise mitigation may be required on Fairview Avenue with the provision of additional noise walls. There is an existing noise barrier along the east side of Fairview adjacent to the Southgate Village subdivision. However, the requirement and details associated with this will need to be investigated as part of Phases 3 and 4 of the EA process when preliminary design takes place.





## 5.0 TRANSPORTATION MASTER PLAN

### 5.1 New Collector Roadways

New collector roadways will be required to serve the two growth areas. Figure 5.1 and 5.2 provide a recommended collector road network for these areas. The following is noted.

#### Area 3

A simple “U” loop system is proposed for this area with possible extensions to lands east, south and west should they develop in the future. The “U” loop portion will be a potential future transit route. The west leg of the loop should be about 300m east of the west boundary of the area which will put the transit route within 300m of the most westerly residents. The westerly intersection with Southdale Line will align with the intersection of Lake Margaret Trail.

The easterly loop road should be aligned with Hickory Lane to consolidate the intersections on Southdale Road. The southerly loop road should be about 300 from the south boundary of the area. This will place all area residents within about 300m of the transit route. A traffic calming feature is proposed on the south collector about mid-way between the east and west collector.

Traffic signals will not be required at intersections with Southdale Line within the 2021 planning period. However, left turn lanes should be provided at the collector intersections. A left turn lane was previously installed in 2006 on Southdale Line at Lake Margaret Trail.

Collector roadway segments in this area are less than 1000m in length and are therefore subject to a Schedule B EA as they will be under \$1.5 million to construct. It is noted that piece meal development is not allowed under an EA. However, if the plan of subdivision does not include the entire collector road, it may be possible to undertake a scoped EA dealing for the portion within the subdivision that demonstrates that alternative alignments outside the plan are not compromised and the best alignment within the plan is chosen.

#### Area 4

The Area 4 collector road network was developed to provide connectivity to the existing roads west of the area (i.e. Pear Tree Avenue, Raven Avenue and Southgate Parkway). It is noted that Pear Tree Avenue has not been constructed to a collector standard and the easterly extension of this road will require it to function in that manner.

Two north-south collectors that divide the area in three parts separated by 300-400m to a new intersection with Elm Street about midway between Coulter Avenue and Bailey Avenue are proposed. Locating the intersections coincident with Coulter Avenue or Bailey Avenue intersections may attract through traffic on these existing local neighbourhood streets. The north-south collector roads in Area 4 will likely require a Schedule C Environmental Assessment as part of the approval of a plan of subdivision given that they are over 1600m in length and will exceed 1.5 million dollars to construct. Collector roadways less than 1000m are subject to a Schedule B EA. It is noted that piece meal development is not allowed under an EA. However, if the plan of subdivision does not include the entire collector road, it may be possible to undertake a scoped EA dealing with the portion within the subdivision that demonstrates that alternative alignments outside the plan are not compromised and the best alignment within the plan is chosen.





Traffic calming such as traffic circles or pinch points should be provided along the north south collectors to discourage speeding given the length and continuity with the streets (1600m). A possible transit route that would locate most residents within 300m walking distance of a route is also shown. It is noted that traffic circles are currently constructed at the intersections of Pear Tree and Peach Tree and Southgate and Penhale in the adjacent community.

Traffic signals at collector intersections with Southdale Line, Elm Street, Centennial Avenue or Southgate Line are not anticipated within the 2021 planning period. However, left turn lanes should be provided at the collector intersections with these arterial roads. It is noted that the recent Elm Street reconstruction has resulted in the provision of a left turn lane at Peach Tree Boulevard.

#### Roundabouts on Arterials

Roundabouts could be considered for arterial collector intersections. However, normally they are considered as an alternative to a traffic signal. As no traffic signals are anticipated as part of development of the subject lands, a roundabout would not be warranted.

A two lane roundabout at an arterial intersection on a 4 lane roadway would require a 50m diameter circular area plus boulevard/sidewalk area with two 5m circular lanes (i.e. a 35m internal circle). A single lane roundabout on a two lane roadway would require a 35m circular area plus boulevard area. These diameters are generally less than the road right-of-ways available on arterial roadways in St. Thomas so additional land would be required.

## 5.2 Roadway Improvement Plan (2028)

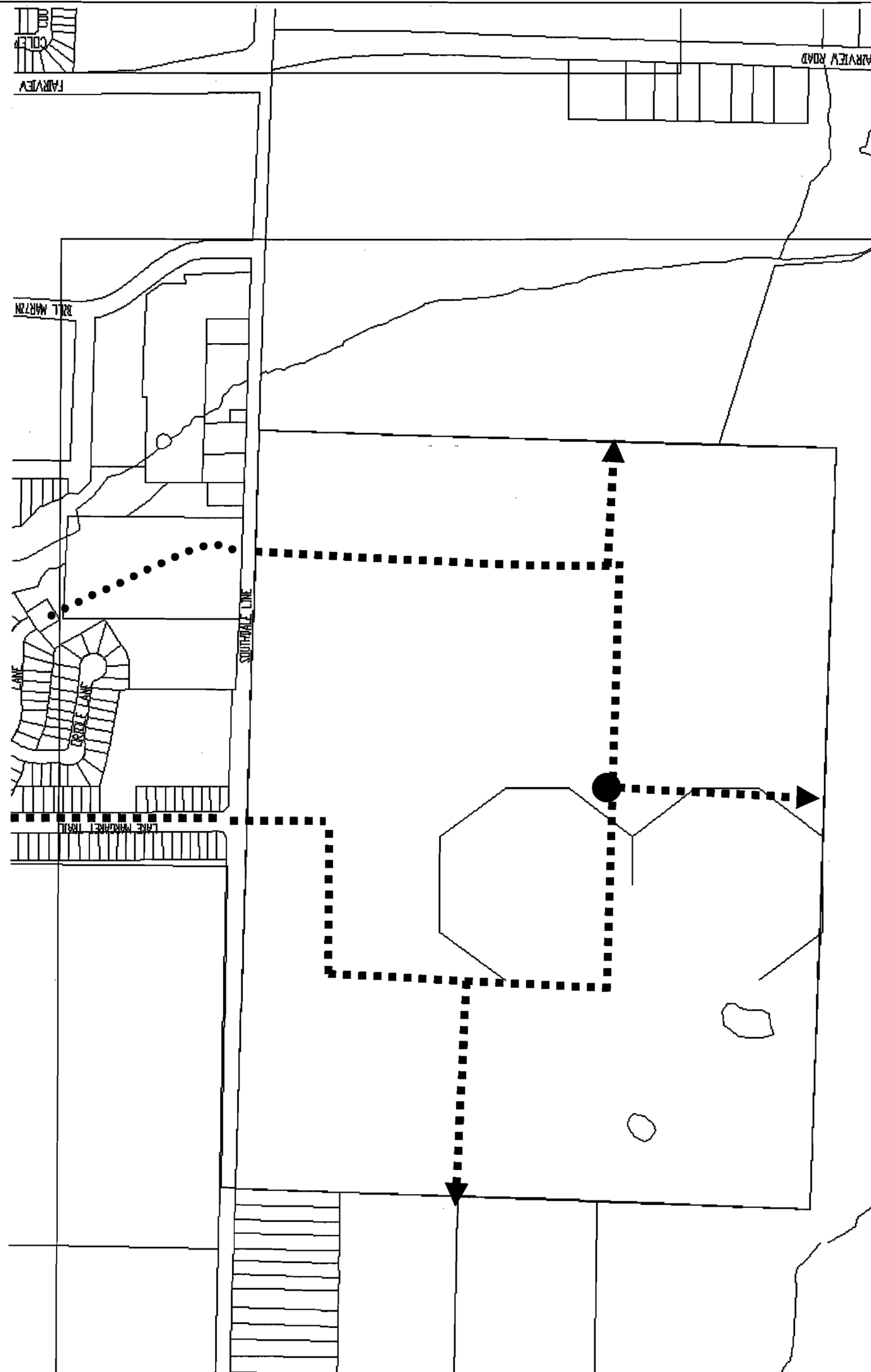
Based on the analysis of existing roadways approaching capacity as shown in Figure 2.3, anticipated background growth as determined from the population and employment forecasts and traffic forecasts from the growth areas and the previous Transportation Master Plan Update<sup>1</sup> a list of identified roadway and intersection improvements has been developed as shown in Figure 5.3. These improvements are subject to completion of Phase 3 and 4 of the Environmental Assessment Process which will continue to consider the "Do-Nothing Option". Several intersection improvements may delay the need for complete corridor widening until beyond the planning period.

Table 5.1 summarizes these road improvement costs as well as significant intersection improvement costs identified by the City of St. Thomas<sup>2</sup>.

<sup>1</sup> City of St. Thomas, Transportation Study Update, Paradigm Transportation Solutions Limited, August 2004

<sup>2</sup> Intersection Capacity Analysis and Ten Year Capital Improvement Plan, Delcan, June 2007





**Figure 5.1**

**Area 3 Collector Road Network**

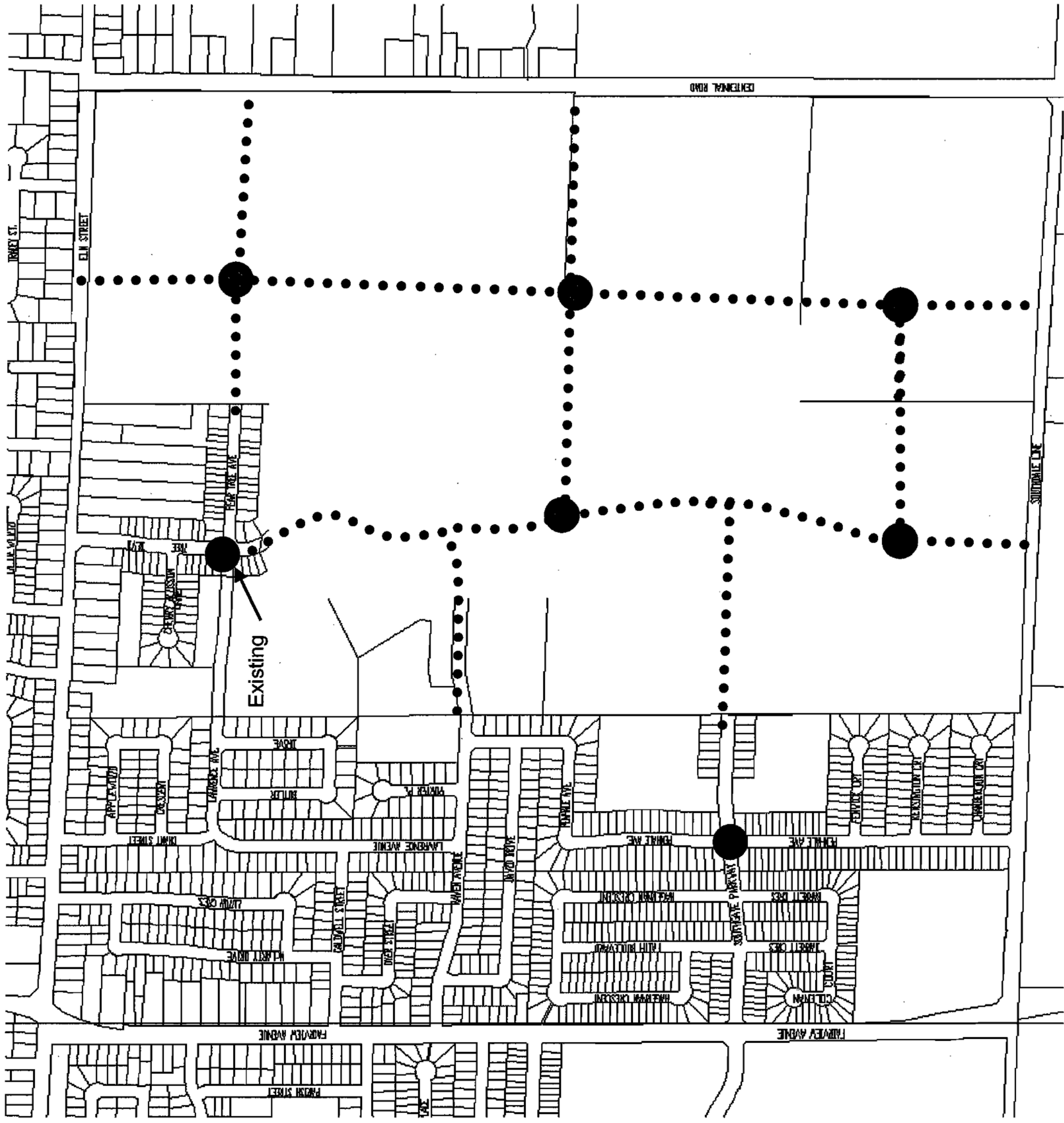
Transportation -Urban Residential Expansion  
Traffic Calming

Collector

Collector- Transit Route







**Figure 5.2**

**Area 4 Collector Road Network**

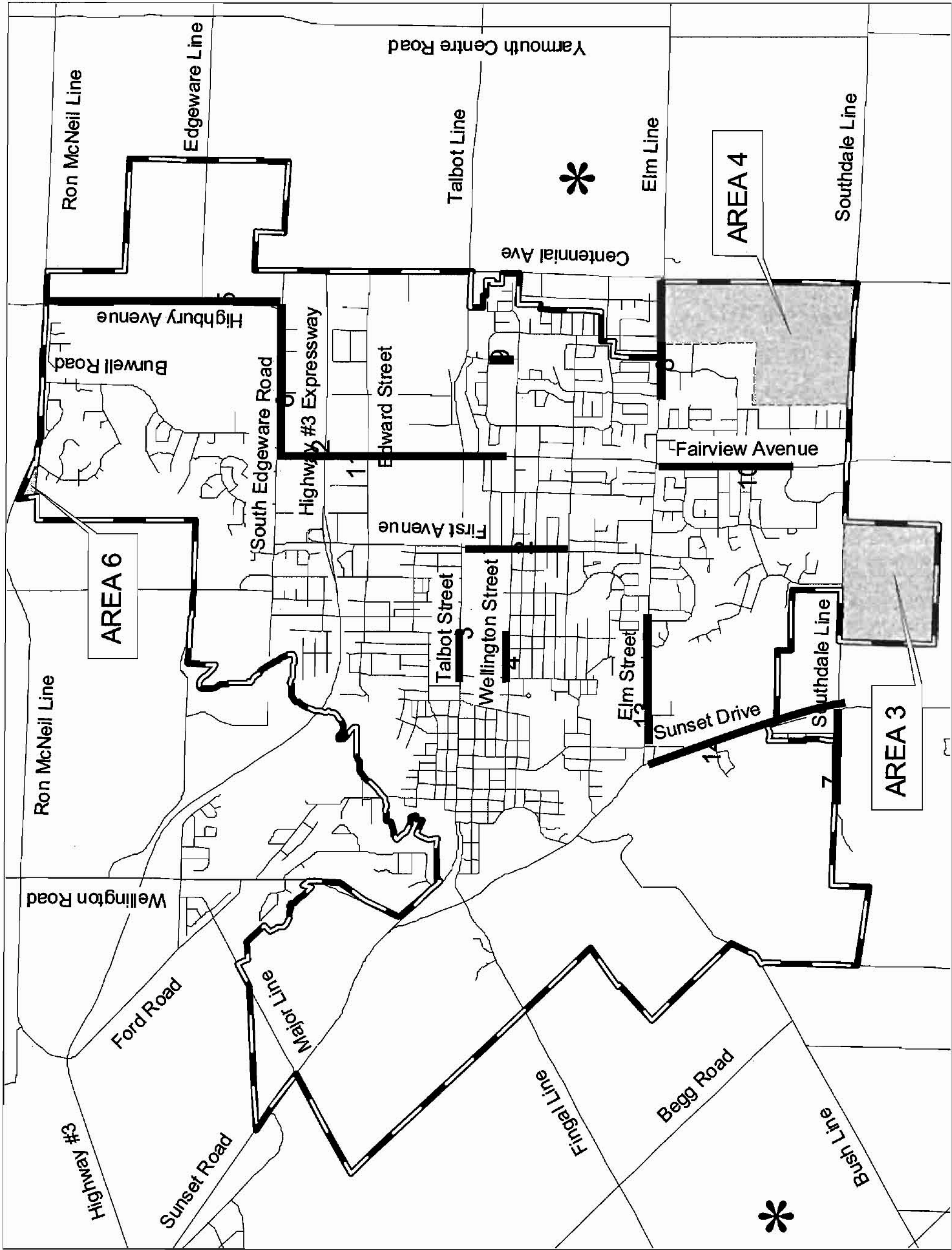
Transportation -Urban Residential Expansion  
Traffic Calming

- Collector
- Collector- Transit Route

Existing  
Roundabout







**Figure 5.3**

**2028 Road Improvements**

Transportation -Urban Residential Expansion





**TABLE 5.1: 2028 ROAD AND INTERSECTION IMPROVEMENTS**

No.	Street	From	To	Action	Length (m)	Unit Cost (\$/m)	Construction Cost (M) *	Property Cost Allowance (M)	Total Cost (M)
Corridor Improvements									
1	First Avenue	Talbot	Wellington	Widen from 2 to 5 lanes	300	\$ 2,000	\$ 0.60	\$ 0.30	\$ 0.90
2	First Ave Underpass	Bridge Removal and Restoration					\$ 0.60		\$ 0.60
3	Talbot Street	Inkerman Street	Ross/Flora	Widen from 2 to 4 lanes	600	\$ 2,000	\$ 1.20	\$ 0.60	\$ 1.80
4	Wellington Street	Fifth Avenue	Ross Street	Widen from 2 to 4 lanes	400	\$ 2,000	\$ 0.80	\$ 0.30	\$ 1.10
5	Highbury Avenue	Edgeware	Ron McNeil Line	Widen from 2 to 4 lanes	1900	\$ 2,000	\$ 3.80		\$ 3.80
6	Edgeware	Burwell	Highbury	Widen from 2 to 4 lanes	1100	\$ 2,000	\$ 2.20		\$ 2.20
7	Southdale Road	West of Hwy.4		Reconstruct 2 Lanes plus railway signal (bell and light)	840	\$ 1,500	\$ 1.36		\$ 1.36
8	Elm Street	Peach Tree Bld.	Centennial Rd.	Widen to 3 lanes	790	\$ 1,800	\$ 1.42		\$ 1.42
9	Manor Road	Highview	Wellington	Upgrade to urban section	150	\$ 2,000	\$ 0.30		\$ 0.30
10	Fairview Avenue	Elm Street	Bill Martyn Pkwy	Widen from 2 to 4 lanes	1000	\$ 2,000	\$ 2.00		\$ 2.00
11	Burwell Road	South Edgeware	Talbot Street	Widen from 2 to 4 lanes	1500	\$ 2,000	\$ 3.00		\$ 3.00
12	Burwell Road Overpas	Replace 2 lane overpass of Highway 3 with 4 lane overpass					\$ 8.00		\$ 8.00
13	Elm Street	Wilson Avenue	Hepburn Avenue	Widen 2-4 lanes plus roundabout at Parkside	1200	\$ 2,000	\$ 2.88		\$ 2.88
14	Sunset Drive	Southdale Line	Glenwood Street	Widen from 2 to 4 lanes	1150	\$ 2,000	\$ 2.30		\$ 2.30
15	Sunset Drive	Glenwood Street	Elm Street	Widen from 2 to 4 lanes	650	\$ 2,000	\$ 1.30		\$ 1.30
						Sub-Total	\$ 31.76	\$ 1.20	\$ 32.96
								Property Cost Allowance (M)	
Intersection Improvements and Signalization					Signals	Other	Construction Cost (M)*		Total Cost (M)
1	East Collector Intersection at Elm Street (Area 4)					\$0.20	\$0.20		\$ 0.20
2	Lake Margaret Trail at Southdale				\$0.23	\$0.10	\$0.33		\$ 0.33
3	Fairview Ave and Southdale				\$0.13	\$0.20	\$0.33		\$ 0.33
4	Wellington Street at Manor				\$0.13	\$0.05	\$0.18		\$ 0.18
5	Wellington Street at Centennial					\$0.20	\$0.20		\$ 0.20
6	Sunset Drive at Glenwood				\$0.13	\$0.20	\$0.33		\$ 0.33
7	East and West Collectors at Southdale (Area 4)					\$0.40	\$0.40		\$ 0.40
8	Southdale Road at Hickory Lane (Area 3)					\$0.20	\$0.20		\$ 0.20
9	Fairview and Axford Parkway				\$0.13	\$0.03	\$0.16		\$ 0.16
10	Elm Street at First Avenue				\$0.13	\$0.20	\$0.33		\$ 0.33
11	Elm Street and Fairview Avenue				\$0.13	\$0.40	\$0.53		\$ 0.53
12	Third Avenue and Wellington Street				\$0.13	\$0.10	\$0.23		\$ 0.23
13	First Avenue at Edward				\$0.10	\$0.66	\$0.76		\$ 0.76
14	Kains at Alma				\$0.12	\$0.00	\$0.12		\$ 0.12
15	Edward at Burwell					\$0.47	\$0.47		\$ 0.47
16	First Avenue at South Edgeware					\$0.18	\$0.18		\$ 0.18
17	Highbury Avenue and Ron McNeil Line					\$0.19	\$0.19		\$ 0.19
18	Talbot Street at Elgin Street				\$0.14	\$0.00	\$0.14		\$ 0.14
19	Talbot Street at Hiawatha				\$0.14	\$0.00	\$0.14		\$ 0.14
20	Talbot Street at Manitoba Street				\$0.12	\$0.00	\$0.12		\$ 0.12
21	Talbot Street at Ross Street				\$0.14	\$0.00	\$0.14		\$ 0.14
22	Talbot Street at St. Catharines				\$0.12	\$0.00	\$0.12		\$ 0.12
23	Talbot Street at St. George				\$0.14	\$0.00	\$0.14		\$ 0.14
24	Edward Street at Burwell Road				\$0.86	\$0.00	\$0.86		\$ 0.86
25	Centennial Road at North and South Collector (Area 4)					\$0.40	\$0.40		\$ 0.40
					Sub-Total	\$3.00	\$4.17		\$7.17
						TOTAL	\$38.93		\$40.13

### 5.3 Public Transit

Extension of conventional and specialized transit services into Areas 3 and 4 has been recommended on the same basis as exists in the current urban area<sup>3</sup>. Infrastructure investment will include accessible buses, bus stops and shelters. No terminal or operations/maintenance facility will be required.

Combined infrastructure and net annual cost would be:

- Conventional Buses: up to 2 vehicles: \$700,000
- Specialized Transit – 1 vehicle: \$90,000
- Bus Stops: 28 at \$1500 each: \$42,000
- Shelters: 25 at \$5000 each: \$25,000
- Net Annual Operating Cost: \$320,000

Additional information is available in the Urban Area Expansion, Transit Master Plan.

<sup>3</sup> Urban Area Expansion, Transit Master Plan, IBI Group

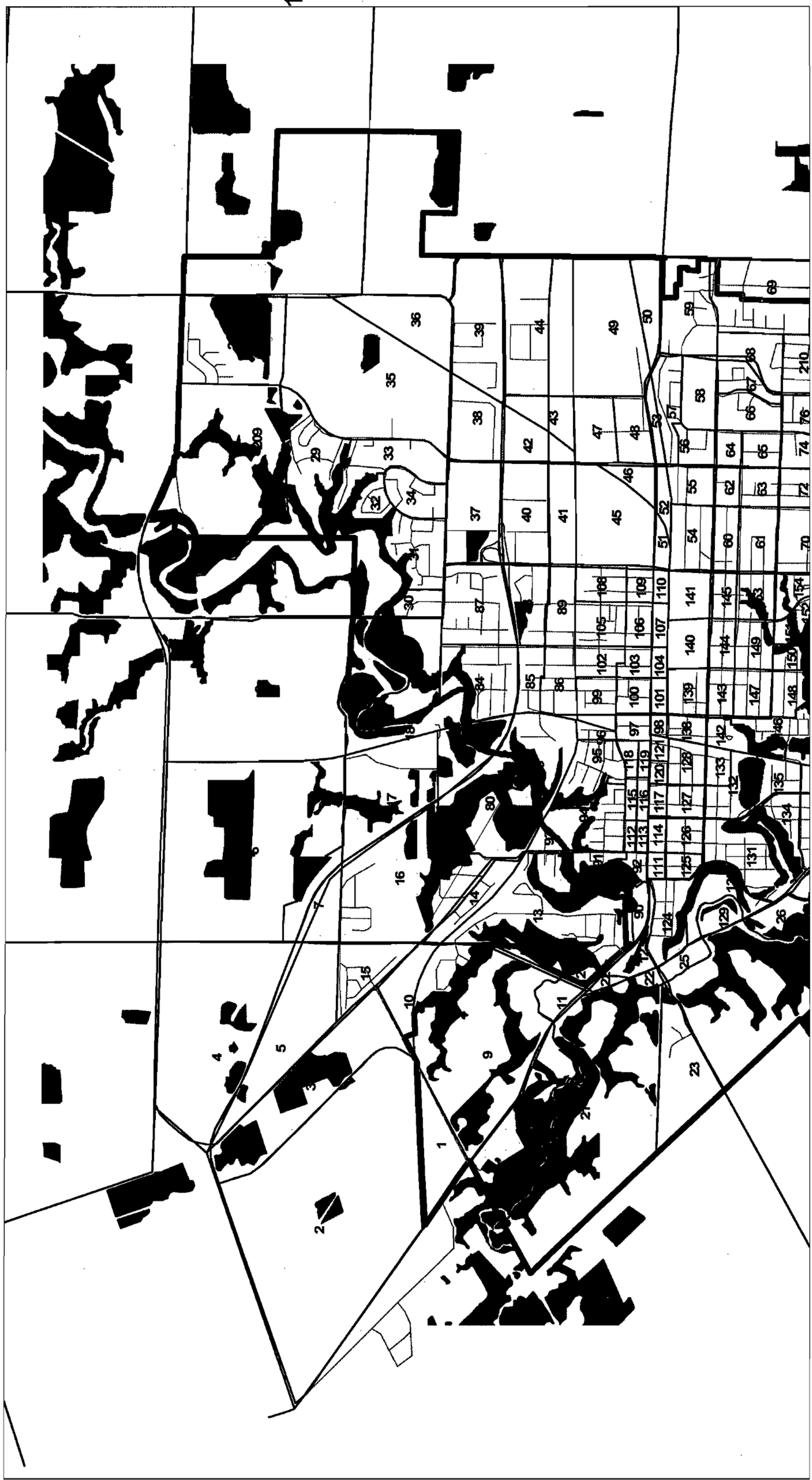




# APPENDIX A: ZONE SYSTEM

---





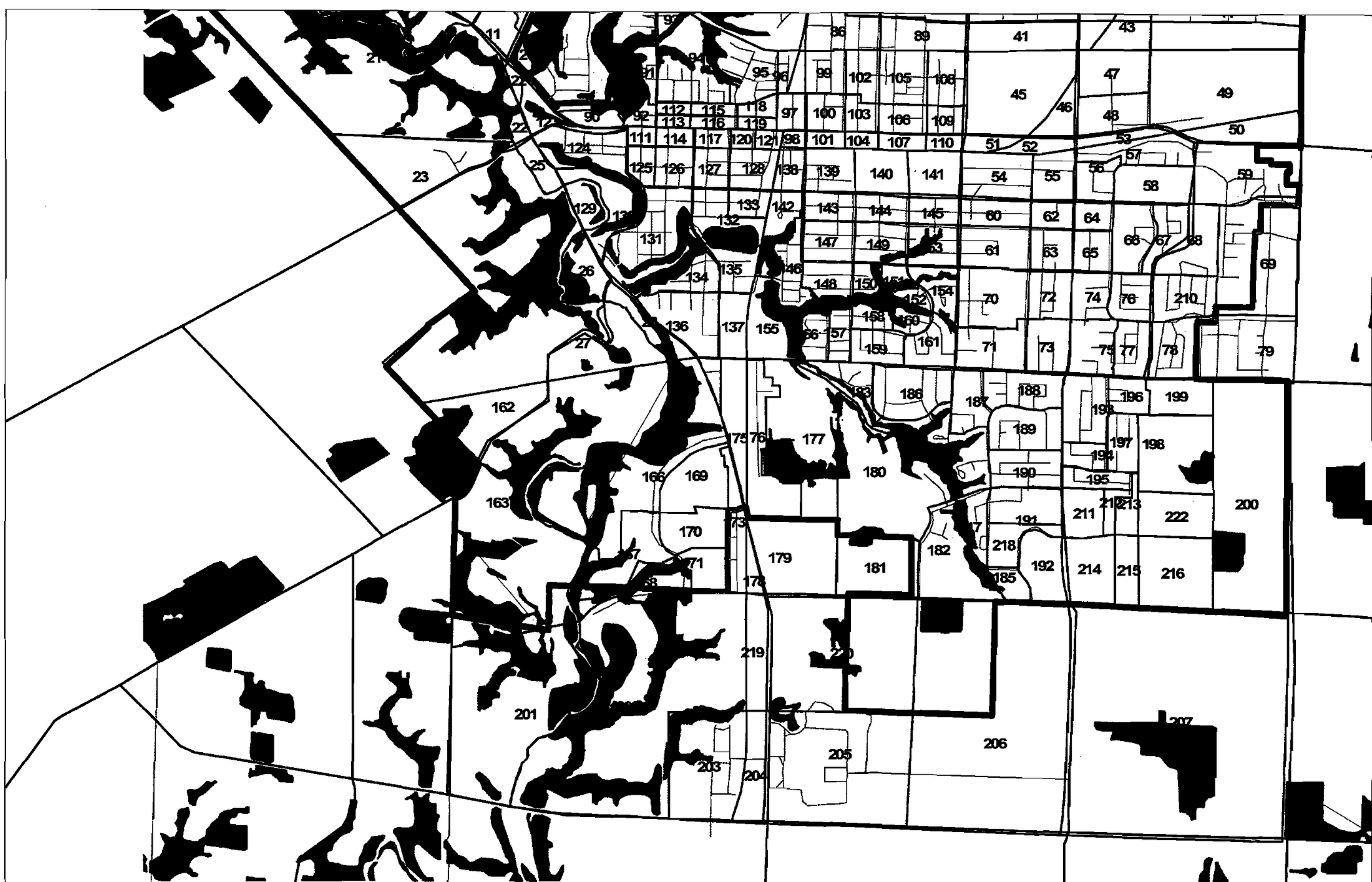
**Figure A1**

**Northern Located Zones**

Transportation - Urban Residential Expansion







Transportation - Urban Residential Expansion



www.wptel.com

Fig

Southern Loc





**APPENDIX B: POPULATION AND EMPLOYMENT  
FORECASTS**

---



ZONE207	Employees2006	Employees2011	Employees2021	Units2001	Units2006	Units2011	Units2021	Pop2001	Pop2006	Pop2011	Pop2021	Notes
1	10	10	50	3	3	3	3	7	7	7	7	Designated Industrial
2	0	0	0	7	7	7	7	17	17	16	16	Designated Industrial
3	0	0	0	2	2	2	2	5	5	5	5	Designated Industrial
4	0	0	0	1	1	1	1	2	2	2	2	Agriculture NIPP
5	0	0	0	5	5	5	5	12	12	12	11	Agriculture NIPP
6	0	0	0	5	5	5	5	12	12	12	11	Agriculture NIPP
7	0	0	0	0	32	35	35	0	76	82	79	
8	0	0	0	3	3	3	3	7	7	7	7	Agriculture NIPP
9	18	18	18	58	58	58	58	139	139	135	131	Agriculture NIPP
10	0	0	0	19	19	19	19	45	45	44	43	
11	0	0	0	1	1	1	1	2	2	2	2	Floodplain
12	0	0	0	0	0	0	0	0	0	0	0	Floodplain
13	0	0	0	216	216	216	216	516	516	503	486	
14	0	0	0	62	62	62	62	148	148	144	140	
15	0	0	0	101	101	101	101	241	241	235	227	
16	0	0	0	131	256	376	592	313	612	876	1332	
17	0	0	0	15	15	15	15	36	36	35	34	Agriculture NIPP
18	0	0	0	6	6	6	6	14	14	14	14	
19	60	60	60	0	0	0	0	0	0	0	0	Schools and Parkland
20	29	29	29	12	12	12	12	29	29	28	27	Mixed Use - Commercial
21	0	0	0	4	4	4	4	10	10	9	9	Agriculture Hazard Land NIPP
22	0	0	0	9	9	9	9	22	22	21	20	
23	0	0	0	13	14	14	14	31	33	33	32	Existing Residential, Agriculture NIPP
24	0	0	0	5	5	5	5	12	12	12	11	Agriculture NIPP
25	0	0	0	4	4	4	4	10	10	9	9	
26	0	0	0	10	10	10	10	24	24	23	23	
27	0	0	0	1	1	1	1	2	2	2	2	
28	0	0	0	113	113	113	113	270	270	263	254	
29	28	28	28	193	207	207	207	461	495	482	466	
30	0	0	0	36	36	36	36	86	86	84	81	
31	0	0	0	196	196	196	196	468	468	457	441	
32	0	0	0	64	64	64	64	153	153	149	144	
33	27	27	27	681	685	685	685	1628	1637	1596	1541	
34	0	0	0	133	133	133	133	318	318	310	299	
35	2317	3195	4003	0	0	0	0	0	0	0	0	
36	449	449	449	0	0	0	0	0	0	0	0	
37	690	710	756	0	0	0	0	0	0	0	0	
38	429	529	555	0	0	0	0	0	0	0	0	
39	200	310	400	2	2	2	2	5	5	5	5	
40	740	740	790	0	0	0	0	0	0	0	0	
41	146	185	205	0	0	0	0	0	0	0	0	
42	776	776	776	0	0	0	0	0	0	0	0	
43	35	35	135	0	0	0	0	0	0	0	0	
44	1636	1686	1711	0	0	0	0	0	0	0	0	
45	1108	1342	1382	0	0	0	0	0	0	0	0	
46	79	79	79	0	0	0	0	0	0	0	0	
47	467	467	492	0	0	0	0	0	0	0	0	
48	509	509	509	0	0	0	0	0	0	0	0	
49	1797	1797	1797	0	0	0	0	0	0	0	0	
50	136	156	252	8	8	8	8	19	19	19	18	Future use Commercial
51	111	111	137	0	0	0	0	0	0	0	0	
52	65	65	91	1	1	1	1	2	2	2	2	
53	0	0	0	0	0	0	0	30	0	0	68	ROW
54	53	53	53	133	133	133	133	318	318	310	299	
55	0	0	0	63	64	64	76	151	153	149	171	
56	0	0	0	137	137	137	137	327	327	319	308	
57	0	0	0	121	121	121	136	289	289	282	306	
58	523	533	599	109	109	129	129	261	261	301	290	
59	76	126	182	262	277	308	308	636	662	718	693	Commercial on Talbot St
60	21	21	21	112	112	112	112	268	268	261	252	
61	30	30	30	228	228	228	228	545	545	531	513	
62	0	0	0	40	42	42	42	96	100	98	95	
63	0	0	0	76	76	76	76	182	182	177	171	
64	0	0	0	55	55	65	65	131	131	151	146	
65	0	0	0	202	202	202	202	483	483	471	455	
66	0	0	0	311	311	311	311	743	743	725	700	
67	0	0	0	146	146	146	161	349	349	340	362	
68	0	0	0	107	107	107	197	256	256	249	443	Intensification
69	0	0	0	232	334	351	351	554	798	818	790	
70	50	50	70	99	99	99	99	237	237	231	223	
71	10	10	10	154	172	172	172	368	411	401	387	
72	0	0	0	111	112	112	112	265	268	261	252	
73	0	0	0	86	96	96	96	206	229	224	216	
74	30	30	30	104	104	104	104	249	249	242	234	
75	18	18	18	123	123	123	123	294	294	287	277	
76	0	0	0	131	131	131	131	313	313	305	295	
77	0	0	0	133	133	133	133	318	318	310	299	
78	0	0	0	186	193	193	193	445	461	450	434	
79	0	0	0	166	173	173	173	397	413	403	389	
80	0	0	0	1	1	1	1	2	2	2	2	
81	0	0	0	1	1	1	1	2	2	2	2	Agriculture NIPP
82	0	0	0	0	0	0	0	0	0	0	0	Access over Rail Small Parcel Mostly Hazard Lar
83	0	0	0	39	39	109	109	93	93	254	245	
84	0	0	0	167	167	167	167	399	399	389	376	
85	0	0	0	87	87	87	87	208	208	203	196	
86	0	0	0	136	136	136	136	325	325	317	306	
87	0	0	0	290	290	290	290	693	693	676	653	
88	60	60	60	88	88	88	88	210	210	205	198	
89	472	482	498	48	48	48	48	115	115	112	108	
90	0	0	0	0	0	0	0	0	0	0	0	Sidehill ROW
91	0	0	0	44	45	45	45	105	108	105	101	
92	72	79	85	10	10	10	10	24	24	23	23	
93	0	0	0	12	12	12	12	29	29	28	27	
94	0	0	0	298	298	298	298	712	712	694	671	
95	0	0	0	238	238	238	238	569	569	555	536	
96	0	0	0	58	58	58	58	139	139	135	131	
97	115	120	127	77	77	77	77	184	184	179	173	
98	85	110	137	9	9	9	9	22	22	21	20	
99	0	0	0	197	198	198	198	471	473	461	446	
100	141	86	90	97	97	97	97	232	232	226	218	
101	122	187	214	0	0	0	0	0	0	0	0	
102	0	0	0	151	151	151	151	361	361	352	340	
103	90	75	102	94	94	94	94	225	225	219	212	
104	120	130	200	0	0	0	0	0	0	0	0	
105	10	10	10	174	174	174	174	416	416	405	392	
106	121	146	173	92	92	92	92	220	220	214	207	
107	46	74	101	0	0	0	0	0	0	0	0	
108	9	9	9	134	134	134	134	320	320	312	302	
109	80	105	132	50	51	51	51	120	122	119	115	
110	163	188	215	0	0	0	0	0	0	0	0	
111	79	104	131	30	30	30	30	72	72	70	68	
112	0	0	0	52	52	52	52	124	124	121	117	
113	155	180	207	48	48	48	48	115	115	112	108	
114	111	136	163	281	281	281	281	672	672	655	632	
115	30	0	0	57	57	57	57	136	136	133	128	



ZONE207	Employees2006	Employees2011	Employees2021	Units2001	Units2006	Units2011	Units2021	Pop2001	Pop2006	Pop2011	Pop2021	Notes
116	229	254	281	56	56	56	56	134	134	130	126	
117	213	238	265	21	21	21	21	50	50	49	47	
118	69	69	95	23	23	23	23	55	55	54	52	
119	289	314	341	29	29	29	29	69	69	68	65	
120	74	99	126	1	1	1	1	2	2	2	2	
121	119	144	171	9	9	9	9	22	22	21	20	
122	0	0	0	0	0	0	0	0	0	0	0	Floodplain
123	0	0	0	0	0	0	0	0	0	0	0	
124	10	16	20	200	200	200	200	478	478	466	450	
125	7	7	7	81	81	81	81	194	194	189	182	
126	40	40	40	266	266	266	266	636	636	620	599	
127	23	23	23	140	140	140	140	335	335	326	315	
128	52	52	52	156	157	157	157	373	375	366	353	
129	0	0	0	1	1	1	1	2	2	2	2	
130	0	0	0	3	9	9	9	7	22	21	20	
131	40	40	40	199	133	133	133	476	318	310	299	
132	50	0	0	128	128	128	128	306	306	298	288	
133	10	10	10	114	114	114	114	272	272	266	257	
134	0	0	0	108	108	108	108	258	258	252	243	
135	0	0	0	99	99	99	99	237	237	231	223	
136	20	25	30	98	98	134	134	234	234	312	302	
137	30	40	100	0	0	0	0	0	0	0	0	Cemetery
138	4	4	4	47	47	47	47	112	112	110	106	
139	46	46	72	129	129	129	129	308	308	301	290	
140	40	84	161	0	0	0	0	0	0	0	0	
141	155	210	277	0	0	0	0	0	0	0	0	
142	0	0	0	45	46	96	96	108	110	224	216	
143	24	24	24	139	139	139	139	332	332	324	313	
144	6	6	6	123	123	123	123	294	294	287	277	
145	76	76	76	78	78	78	78	186	186	182	176	
146	17	17	17	159	159	159	159	380	380	370	358	
147	30	30	30	177	178	178	178	423	425	415	401	
148	0	0	0	149	149	149	149	356	356	347	335	
149	0	0	0	141	141	141	141	337	337	329	317	
150	0	0	0	52	52	52	52	124	124	121	117	
151	0	0	0	5	5	5	5	12	12	12	11	
152	0	0	0	6	6	6	6	14	14	14	14	
153	0	0	0	104	104	104	104	249	249	242	234	
154	0	0	0	88	88	88	88	210	210	205	198	
155	50	50	50	0	0	0	0	0	0	0	0	
156	0	0	0	72	72	72	72	172	172	168	162	
157	0	0	0	84	84	84	84	201	201	196	189	
158	65	65	65	83	83	83	83	198	198	193	187	
159	0	0	0	106	106	106	106	253	253	247	239	
160	0	0	0	66	66	66	66	158	158	154	149	
161	40	50	60	125	125	125	125	299	299	291	281	
162	0	0	0	4	4	4	4	10	10	9	9	
163	0	0	0	5	5	5	5	12	12	12	11	300 Acres in Agriculture/Hazard (NIPP)
165	21	21	21	8	9	9	9	19	22	21	20	
166	0	0	0	0	12	88	224	0	29	205	504	
167	0	0	0	0	0	0	210	0	0	0	473	
168	0	0	0	4	4	4	4	10	10	9	9	
169	0	0	0	3	76	242	242	7	182	564	545	
170	0	0	0	0	0	0	186	0	0	0	419	
171	0	0	0	3	3	3	105	7	7	7	236	
173	0	0	0	64	64	64	64	153	153	149	144	
175	20	0	0	60	60	60	143	143	143	140	135	
176	80	121	140	250	250	250	250	598	598	583	563	High School
177	0	0	0	25	25	25	25	60	60	58	56	Pinafore Park (Regional)
178	0	0	0	9	9	9	9	22	22	21	20	
179	20	20	20	7	7	7	7	17	17	16	16	Commercial Nursery
180	0	0	0	30	180	293	293	72	430	683	659	
181	0	0	0	0	29	29	29	0	69	68	65	Nursery Stock
182	0	0	0	38	171	272	272	91	409	634	612	
183	0	0	0	70	70	70	70	167	167	163	158	
184	0	0	0	96	107	107	107	229	256	249	241	
185	0	0	0	3	3	3	3	7	7	7	7	
186	900	900	900	98	98	98	98	234	234	228	221	
187	83	83	83	78	78	78	78	186	186	182	176	
188	0	0	0	267	267	267	267	638	638	622	601	
189	30	0	0	147	147	147	147	351	351	343	331	
190	0	0	0	207	208	208	208	495	497	485	468	
191	35	35	35	79	82	82	82	189	196	191	185	
192	0	0	0	0	0	0	0	0	0	0	0	Ball Complex
193	0	0	0	146	147	147	147	349	351	343	331	
194	0	0	0	79	79	79	79	189	189	184	178	
195	0	0	0	89	89	89	89	213	213	207	200	
196	0	0	0	60	60	60	60	143	143	140	135	
197	0	0	0	79	79	79	79	189	189	184	178	
198	0	70	70	0	0	224	284	0	0	522	639	
199	0	0	0	15	19	84	84	36	45	196	189	
200	0	0	0	3	3	3	574	7	7	7	1292	Agriculture NIPP
201	0	0	0	2	2	2	2	5	5	5	5	
202	0	0	0	15	15	15	321	36	36	35	722	300 Acres in Agriculture/Hazard (NIPP)
203	0	0	0	67	67	67	67	160	160	156	151	
204	180	180	180	4	4	4	4	10	10	9	9	Primarily Government Office Use
205	200	200	200	0	0	0	0	0	0	0	0	Ontario Hospital To Be Closed
206	0	0	0	7	7	105	517	17	17	245	1163	Agriculture NIPP
207	0	0	0	19	19	19	19	45	45	44	43	Agriculture NIPP
208	0	238	408	91	226	226	226	217	540	527	509	Large Woodlot, Park and Industrial
209	0	0	0	0	260	667	718	0	621	1554	1616	
210	0	0	0	161	208	208	208	385	497	485	468	
211	0	0	0	0	130	149	149	0	311	347	335	
212	0	0	0	0	47	47	47	0	112	110	106	
213	0	0	0	6	57	57	57	14	136	133	128	
214	0	0	0	0	125	157	157	0	299	366	353	
215	0	0	0	0	45	109	109	0	108	254	245	
216	0	0	0	0	0	60	330	0	0	140	743	Agriculture NIPP
217	0	0	0	52	73	73	73	124	174	170	164	
218	35	35	35	0	0	0	0	0	0	0	0	Fanshawe College St Joe's High School Park
219	0	0	0	29	29	29	29	69	69	68	65	
220	0	0	0	44	44	44	644	105	105	103	1449	(NIPP)
221	0	0	0	3	3	3	3	7	7	7	7	Dalewood Conservation Campground
222	0	0	0	0	0	50	210	0	0	117	473	Agriculture NIPP
223	51	101	770	0	0	0	0	0	0	0	0	
224	0	0	870	0	0	0	0	0	0	0	0	
Total	18237	20502	24573	15043	16607	16439	21881	35965	39689	42970	49247	