DILLON CONSULTING LIMITED

Dougall Parkway / Sixth Concession Road Environmental Study Report City of Windsor

Sixth Concession Bridge at Dougall Parkway– November 1998

June 1999

DILLON CONSULTING

EXECUTIVE SUMMARY

The Dougall Parkway/Sixth Concession Road project has undergone an extensive planning and design process, as required by the Class Environmental Assessment (Class EA) for Municipal Road Projects (June 1993). As a result, it has been determined that the construction of a partial interchange at this location would be an effective means of addressing the growing traffic demands in the Roseland Planning District.

The construction of the proposed partial interchange will provide several benefits to the overall road network, including:

- utilization of the available capacity on Dougall Parkway while simultaneously reducing the traffic volumes on North Talbot Road and Cabana Road by 32 percent and 28 percent respectively;

- provide a more direct route to and from the Roseland Planning District, resulting in reduced travel times;

- enhancing the flexibility of the road network in this part of the City, thereby reducing the risk of traffic conflicts and localized congestion;

- reducing the degree of intersection improvements ultimately required to accommodate the complete development of the Roseland Planning District, including delaying the need for these improvements; and

- reducing the likelihood of traffic infiltration into existing adjacent residential neighbourhoods.

Accordingly, it is recommended that the City consider implementing the proposed Dougall Parkway/Sixth Concession interchange subject to comments received during the final mandatory public review period.

TECHNICAL SUMMARY

INTRODUCTION

Dillon Consulting Limited was retained by the City of Windsor to identify and evaluate alternative solutions to address the growing traffic demands resulting from development within the Roseland Planning District. An interchange at Dougall Parkway and Sixth Concession Road is among the alternative solutions requiring consideration, as identified in recent engineering studies. The development of a preferred design solution for this undertaking is subject to the requirements of the "Class Environmental Assessment (Class EA) for Municipal Road Projects" (June 1993).

CLASS ENVIRONMENTAL ASSESSMENT PROCESS

The Dougall Parkway/Sixth Concession Road project follows the requirements of the Class Environmental Assessment for Municipal Road Projects, as set forth in the document prepared by the Municipal Engineers Association, dated June 1993.

The Class EA process is an approved planning procedure for municipal projects which are anticipated to have relatively minor and predictable environmental effects. This process assures the public and affected agencies that the project planning takes into account the impacts on the social, natural and economic environments.

Within the parameters set forth in the Class EA document, it has been determined that the proposed Dougall Parkway/Sixth Concession Road improvement is a Schedule C activity, where the "reconstructed road will not be for the same purpose, use, capacity or at the same location as the facility being constructed", and the construction value is greater than $1.5M.

NEED FOR IMPROVEMENTS - PROBLEM IDENTIFICATION

Since 1989, there has been substantial growth of residential development in the Roseland Planning District. During the same period, significant commercial development has occurred on Walker Road, north of Provincial Road (Legacy Park) and industrial growth in the adjoining Town of Tecumseh (formerly Township of Sandwich South). As a result, traffic volumes have increased

significantly which has lead to capacity problems on area roadways. Further, the increase in traffic volumes is expected to continue as development continues in the vacant lands within the planning district and adjoining areas.

The "City of Windsor - Roseland Planning District Traffic Impact Study (July 1997)" undertook an evaluation of roadway requirements and impacts associated with existing and future traffic volumes resulting from continual growth within and adjacent to the Roseland Planning District. As the 1997 report was being completed, the City was informed that on January 1, 1998 ownership of the portion of King's Highway No. 401, west of the Sixth Concession overpass, was to be transferred to the City of Windsor. As an alternative to relieving the traffic impacts identified in the July 1997 report, the City considered the feasibility of constructing an interchange at Sixth Concession Road and Dougall Parkway (formerly King's Highway No. 401). The findings were documented in a report entitled "Proposed Highway 401/Sixth Concession Interchange - Traffic Impact Study" (November 1997).

For the purpose of this study, the following Problem Statement was developed:

> **"The City of Windsor Traffic Engineering Department has recently completed an assessment of the impact of future development in the Roseland Planning District. Following the transfer of Hwy. 401 from Ministry of Transportation ownership to City of Windsor ownership on January 1, 1998, the City is reviewing potential improvements to the above noted interchange to alleviate future traffic capacity problems in the area. The purpose of this ESR (Environmental Study Report) is to define the function and potential improvements required to Sixth Concession Road at Dougall Parkway (formerly Hwy. 401) interchange to meet the anticipated needs associated with proposed development in the area."**

PUBLIC AND AGENCY INPUT

In accordance with the Class EA document, Schedule "C" undertakings must satisfy minimum requirements for public notification and consultation. A program of formal public and review agency consultation was implemented for this project and three formal points of public contact were established:

- Public Information Centre (December 9, 1998); and,
- Notice of Completion (June 9, 1999).

In addition to the above, letters were forwarded to all affected agencies and property owners along Sixth Concession Road. Meetings and telephone discussions were also held with the Study Team, affected City of Windsor Departments, the public and affected agencies.

PREFERRED SOLUTION

An evaluation was undertaken for each alternative solution to address the identified problem, including an evaluation of the alternatives based on the potential impact of each on the natural, social and economic environments. Based on the evaluation undertaken, the "Construction of a new interchange/intersection at Sixth Concession Road and Dougall Parkway", was identified as the preferred solution. This solution was selected for the following reasons:

- Addresses the problems associated with projected traffic volume increases in the Study Area;
- Provides immediate Level of Service improvements at various intersections and results in a reduction in the volume of traffic on various roadways within the Study Area; and
- The resulting redistribution of traffic will serve to reduce the scope of other intersection improvements in the Study Area and delay the timing for these improvements.

PREFERRED DESIGN

The preferred design for the Dougall Parkway/Sixth Concession interchange is shown in Figure 9, the details of which were developed in consideration of comments received at the Public Information Centre of December 9, 1998, and subsequent meetings with affected landowners. Modifications to the recommended design presented at these meetings were required primarily to reduce the amount of property necessary to accommodate the improvements. A description of these modifications is included in Section 7.1 of the ESR.

PRELIMINARY COST ESTIMATES

A preliminary cost estimate was prepared for the preferred design based on typical unit prices recently tendered for similar work, as outlined below:

• Construction		$ 2,500,000
• Engineering		$ 400,000
• Utilities		$ 50,000
• Contingency		$ 250,000
• Interim Financing		$ 100,000
• Land and Survey		$ 150,000
	SUBTOTAL	**$ 3,450,000**
	NET G.S.T. (3/7 of 7%)	**$ 105,000**
	TOTAL	**$ 3,555,000**

FILING THE ESR

Subject to City Council approval, this ESR will be filed in the public record for a minimum 30 day period. The public will be notified of the project's completion by means of a notice to be published in the Windsor Star.

This project is approved to proceed subject to resolving public concerns within the 30 day review period. If concerns raised during this period cannot be resolved, individuals may request that the Minister of Environment "bump up" this project to an individual Environmental Assessment.

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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

Dillon Consulting Limited was retained by the City of Windsor to identify and evaluate alternative solutions to address the growing traffic demands resulting from development within the Roseland Planning District, as shown in Figure 1.0. An interchange at Dougall Parkway and Sixth Concession Road is among the alternative solutions requiring consideration, as identified in recent engineering studies. The development of a preferred design solution for this undertaking is subject to the requirements of the "Class Environmental Assessment (Class EA) for Municipal Road Projects" (June 1993).

1.2 Background

In 1989, the City of Windsor undertook a traffic impact study for the Roseland Planning District. At that time, there were a number of residential developments proposed for the area, based on which the study was undertaken to identify the roadway improvements required to accommodate the projected growth.

Since 1992, the majority of these residential development proposals have progressed to construction, particularly those in the South Roseland Planning Area, comprising lands bounded by Dougall Parkway to the north, King's Highway No. 401 to the east and south and Howard Avenue to the west, as shown in Figure 1.0. There has also been increased development in the former Sandwich South Industrial Park to the east (now in the Town of Tecumseh), as well as commercial development activity on Walker Road, north of Provincial Road. As a result, traffic volumes have increased significantly which has lead to capacity problems on area roadways. Further, the increase in existing traffic volumes is expected to continue as development progresses in the presently vacant lands within the North Roseland Planning Area bounded by Provincial Road and Cabana Road to the north, King's Highway No. 401 to the east and south, Dougall Parkway to the south and Howard Avenue to the west, as shown in Figure 1.0.

The City of Windsor recently undertook an update to the earlier study, entitled "City of Windsor - Roseland Planning District Traffic Impact Study (July 1997)", which considered impacts associated with the existing traffic volumes and the projected increase resulting from continued growth within and adjacent to the Roseland Planning District.

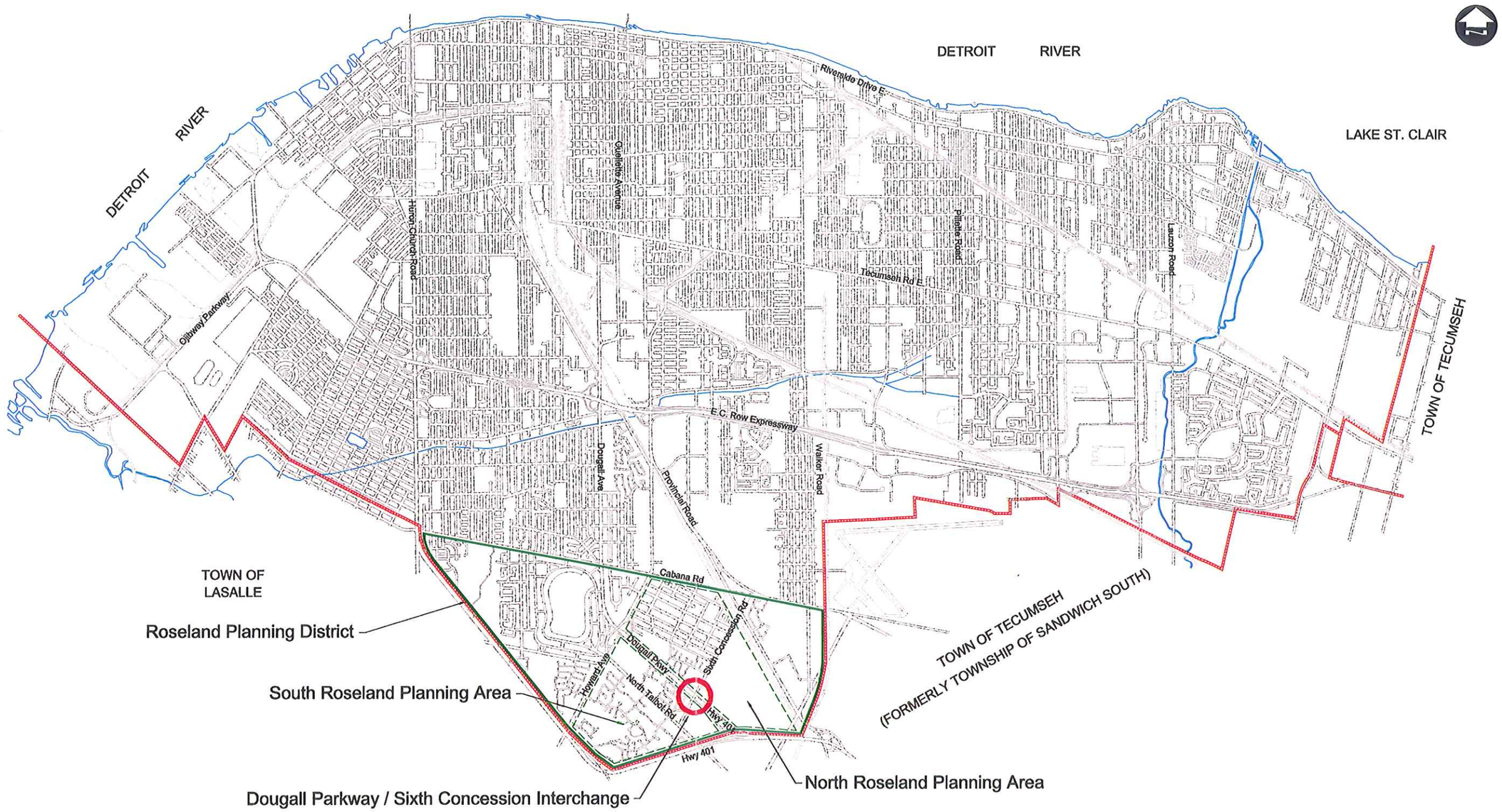

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FIGURE 1.0
Location Map
N.T.S.
Dougall Parkway at Sixth Concession Road
Environmental Study Report
City of Windsor

As the July 1997 report was nearing completion, the City was informed that ownership of the portion of King's Highway No. 401 west of the Sixth Concession Road overpass, would be transferred to the City of Windsor effective January 1, 1998. As an alternative to relieving the traffic impacts identified in the July 1997 report, the City considered the feasibility of constructing an interchange/intersection at Sixth Concession Road and Dougall Parkway (formerly King's Highway No. 401). The findings were documented in a report entitled "Proposed Hwy. 401/Sixth Concession Interchange - Traffic Impact Study" (November 1997). Construction of an interchange at this location was found to reduce the projected traffic volumes in the Cabana Road, Provincial Road and North Talbot Road corridors, thereby deferring the need and scope of intersection improvements recommended in the July 1997 report.

Prior to implementation of roadway improvements, the City is required to fulfill the requirements of a Class Environmental Assessment for the project. It is important to note that the reports prepared by F. R. Berry were not intended to fulfill the requirements of the Class EA, but these reports have established the need for improvements in this area and can be used to provide the necessary background technical information.

1.3 Related Studies

This Environmental Study Report has been prepared with references to the following related studies:

- "***Development Plan for the North Roseland Planning Area (August 1981)***" prepared by N. K. Becker and Associates Limited.
- "***Sixth Concession Industrial Park - Servicing Feasibility Study (February 1987)***" prepared by N. K. Becker and Associates Limited.
- "***South Windsor/South Roseland Planning Area - Traffic Impact Study (December 1989)***" prepared by DS-Lea Associates Limited.
- "***Official Plan of the City of Windsor Planning Area (As amended to July 1996)***" prepared by the Corporation of the City of Windsor.
- "***Noise Impact Study for the Proposed R. V. Investments North Talbot Road Subdivision, City of Windsor (April 25, 1996)***" prepared by Spaarg Engineering Limited.

- ***"North Roseland Phase 2 Secondary Plan"***, prepared by the City of Windsor (1997).
- ***"City of Windsor - Roseland Planning District Traffic Impact Study (July 1997)"*** prepared by F. R. Berry & Associates Limited.
- ***"Proposed Hwy. 401/Sixth Concession Interchange Traffic Impact Study (November 1997)"*** prepared by F. R. Berry & Associates Limited.
- ***"Windsor, Vision in Action - City of Windsor Official Plan, Working Draft (October 26, 1998)"*** prepared by the Corporation of the City of Windsor.
- ***"Windsor Area Long Range Transportation Study (1998 Draft)"*** prepared by Stantec Consulting Group.

1.4 Study Area

Two Study Areas have been defined for purposes of this undertaking, as shown in Figure 2 and further described below:

The Primary Study Area was identified for purposes of evaluating the alternative design concepts arising from the preferred solution identified at the conclusion of Phase 2 of the Class EA process. This area includes the lands immediately adjacent to the existing Sixth Concession Road overpass crossing Dougall Parkway, the boundary of which is defined by the limits of the design concept along Dougall Parkway and Sixth Concession Road.

The boundary for the Secondary Study Area was identified for purposes of including the areas impacted by the growth in traffic resulting from development in the Roseland Planning District. The boundary includes areas likely to experience direct impacts resulting from any future roadway improvements. In general, the Secondary Study Area includes the area bounded by Cabana Road to the north, Walker Road to the east, King's Highway 401 to the south, and Dougall Avenue and Howard Avenue to the west.

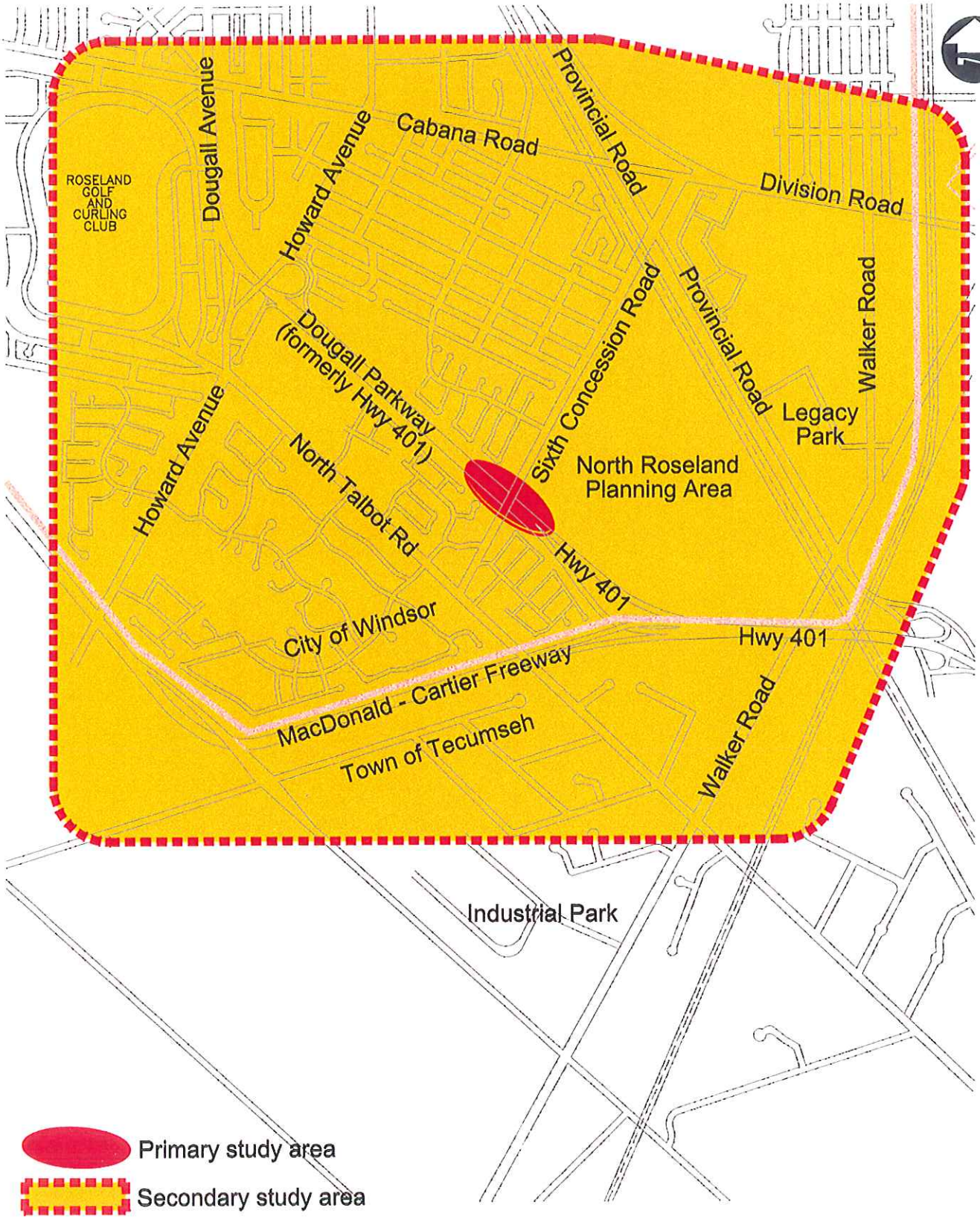

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FIGURE 2.0
Primary & Secondary Study Areas
N.T.S.
Dougall Parkway at Sixth Concession Road
Environmental Study Report
City of Windsor

2.0 ENVIRONMENTAL ASSESSMENT PROCESS

2.1 Class Environmental Assessment

This Study follows the requirements of the Class Environmental Assessment (EA) Process for Municipal Roads Projects. See Figure 3.0 for an overview of the Class EA process.

The Class EA is an approved planning and design procedure for projects which are recurring, similar in nature, limited in scale, have a predictable range of environmental effects and are responsive to mitigating measures. The Class EA process involves the five key principles of successful and responsible planning under the EA Act:

- **Consultation with affected parties to ensure the planning process is a co-operative venture.**
- **Consideration of a reasonable range of alternatives.**
- **Identification and consideration of the effects of each alternative on all aspects of the environment.**
- **Systematic evaluation of alternatives in terms of their advantages and disadvantages, to determine their net environmental effects.**
- **Provision of clear and complete documentation of the planning process followed to allow "traceability" of decision making with respect to the project.**

Within the parameters set forth in the Class EA document, it has been determined that the Dougall Parkway/Sixth Concession Road project is a Schedule "C" activity. The level of improvements required to address the identified traffic impacts necessitates a project having the following description: Dougall Parkway/Sixth Concession Road "Reconstruction where the constructed road will not be for the same purpose, use, capacity or at the same location as the facility being reconstructed and the project has a construction value greater than $1.5M."

PLANNING AND DESIGN PROCESS FOR MUNICIPAL ROAD PROJECTS

PHASE 1

1 IDENTIFY PROBLEM

2 DISCRETIONARY PUBLIC CONSULTATION TO REVIEW PROBLEM

PHASE 2

1 IDENTIFY ALTERNATIVE SOLUTIONS TO PROBLEM

SELECT SCHEDULE (APPENDIX 1)

2 INVENTORY NATURAL, SOCIAL, ECONOMIC ENVIRONMENT

3 IDENTIFY IMPACT OF ALTERNATIVE SOLUTIONS ON THE ENVIRONMENT, AND MITIGATING MEASURES

4 EVALUATE ALTERNATIVE SOLUTIONS: IDENTIFY RECOMMENDED SOLUTIONS

5 CONSULT REVIEW AGENCIES & PUBLIC Re PROBLEM AND ALTERNATIVE SOLUTIONS

6 SELECT PREFERRED SOLUTION

REVIEW & CONFIRM CHOICE OF SCHEDULE

MAY OPTION LAND

APPROVED MAY PROCEED

SCHEDULE A

FIRST * OPPORTUNITY FOR LAND ACQUISITION (SCHEDULE B)

IF NO BUMP-UP MAY PROCEED

BUMP-UP GRANTED, PROCEED WITH INDIVIDUAL E.A. OR ABANDON PROJECT

OPPORTUNITY FOR BUMP-UP REQUEST TO MINISTER WITHIN 30 DAYS OF NOTIFICATION

NOTICE OF COMPLETION TO REVIEW AGENCIES & PUBLIC

SCHEDULE B

SCHEDULE C

INDIVIDUAL E.A.

PHASE 3

1 IDENTIFY ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION

2 DETAIL INVENTORY OF NATURAL, SOCIAL AND ECONOMIC ENVIRONMENT

3 IDENTIFY IMPACT OF ALTERNATIVE DESIGNS ON ENVIRONMENT, AND MITIGATING MEASURES

4 EVALUATE ALTERNATIVE DESIGNS: IDENTIFY RECOMMENDED DESIGN

5 CONSULT REVIEW AGENCIES & PREVIOUSLY INTERESTED & DIRECTLY AFFECTED PUBLIC

6 SELECT PREFERRED DESIGN

REVIEW ENVIRONMENTAL SIGNIFICANCE & CHOICE OF SCHEDULE

7 PRELIMINARY FINALIZATION OF PREFERRED DESIGN

FIRST * OPPORTUNITY FOR LAND ACQUISITION (OR EXPROPRIATION) FOR SCHEDULE C PROJECTS

DISCRETIONARY PUBLIC CONSULTATION TO REVIEW PREFERRED DESIGN

PHASE 4

1 COMPLETE ENVIRONMENTAL STUDY REPORT (ESR)

2 ENVIRONMENTAL STUDY REPORT (ESR) PLACED ON PUBLIC RECORD

NOTICE OF COMPLETION TO REVIEW AGENCIES & PUBLIC

3 OPPORTUNITY FOR BUMP-UP REQUEST TO MINISTER WITHIN 30 DAYS OF NOTIFICATION

BUMP-UP GRANTED, PROCEED WITH INDIVIDUAL E.A. OR ABANDON PROJECT

BUMP-UP DENIED WITH OR WITHOUT MINISTERS CONDITIONS

PHASE 5

1 COMPLETE CONTRACT DRAWINGS AND TENDER DOCUMENTS

2 PROCEED TO CONSTRUCTION AND OPERATION

3 MONITOR FOR ENVIRONMENTAL PROVISIONS AND COMMITMENTS

* NOTE: PROPONENTS MUST RECOGNISE THAT ACQUISITION AT THIS STAGE CARRIES THE RISK THAT A BUMP-UP COULD OCCUR AND THE PROJECT MAY SUBSEQUENTLY NOT BE APPROVED

NOTE: THIS FLOWCHART IS TO BE READ IN CONJUNCTION WITH THE "EXPLANATION OF PLANNING & DESIGN PROCESS" IN THE MUNICIPAL ENGINEERS ASSOCIATION'S PUBLICATION CLASS ENVIRONMENTAL ASSESSMENT FOR MUNICIPAL ROAD PROJECTS, JUNE 1993.

INDICATES POSSIBLE EVENTS

INDICATES MANDATORY EVENTS

INDICATES PROBABLE EVENTS

MANDATORY PUBLIC CONTACT POINTS

DECISION POINTS ON CHOICE OF SCHEDULE

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FIGURE 3.0
Environmental Assessment Process
N.T.S.
Dougall Parkway at Sixth Concession Road
Environmental Study Report
City of Windsor

Accordingly, the following summarizes the steps taken to comply with the requirements of the Class EA process for this project:

Phase 1 - Identify the problem.

Phase 2 - Identify alternative solutions to the problem and establish the preferred solution taking into account the input from the public and affected agencies.

Phase 3 - Identify and examine alternative design concepts, based upon the existing environment, public and government agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects. Establish the preferred design taking into account the input from the public and affected agencies.

Phase 4 - Document, in an Environmental Study Report, a summary of the rationale, and the planning, design and consultation process of the project as established through the above Phases and make such documentation available for scrutiny by review agencies and the public.

2.2 Study Team

A study team was formed comprising representatives from various departments within the City of Windsor and Dillon. The study team was formed to co-ordinate planning and to provide direction to the consultant in carrying out the assigned tasks. Also, meetings were held on a monthly basis to provide updates on the progress and to obtain information. The following list recognizes the members of the study team representing the City of Windsor.

Mr. T.W. Szalay, P. Eng.	-	Public Works Department
Mr. Mark Winterton, P. Eng.	-	Public Works Department
Mr. Doug Caruso, MCIP	-	Planning Department
Mr. Mike Palanacki, P. Eng.	-	Traffic Engineering
Mr. Wes Hicks, P.Eng.	-	Traffic Engineering
Mr. Mike Stamp	-	Legal & Human Resources Department

2.3 Public and Review Agency Consultation

In accordance with the Class EA document, Schedule "C" undertakings must satisfy minimum requirements for public notification and consultation. The following program of formal public and review agency consultation was implemented for this project.

Phase 1 - Advise the initiation of the Class EA process

Phase 2 - Public and review agency notification, identifying the problem and alternative solutions

Phase 3 - Public Information Centre meeting for review of the alternative and recommended design concepts by interested parties and those directly affected by the project.

Phase 4 - Notification of completion for review of the Environmental Study Report.

In addition to the above, meetings and telephone discussions were held with the Study Team, affected City of Windsor departments, the public and affected agencies. A collection of information related to Public Notification is included in Appendix "A" for reference. Further information related to the Public Information Centre, December 9, 1998, is included in Appendix "B" and Public and Agency comments related to this project are included in Appendix "C". Information related to the internal Study Group Meeting is located in Appendix "D".

3.0 PROBLEM IDENTIFICATION

3.1 Problem Statement

For the purpose of this study the following Problem Statement was developed:

> **"The City of Windsor Traffic Engineering Department has recently completed an assessment of the impact of future development in the Roseland Planning District. Following the transfer of Hwy. 401 from Ministry of Transportation ownership to City of Windsor ownership on January 1, 1998, the City is reviewing potential improvements to the above noted interchange to alleviate future traffic capacity problems in the area. The purpose of this ESR (Environmental Study Report) is to define the function and potential improvements required to Sixth Concession Road at Dougall Parkway (formerly Hwy. 401) interchange to meet the anticipated needs associated with proposed development in the area."**

The Problem Statement was supported by the Study Team and presented at the Public Information Centre.

4.0 THE ENVIRONMENT

The following sections provide a general description of the existing and future environment. Refer to the following figures for general information purposes:

- Figure 4.0 - Existing and Proposed Land Uses
- Figure 5.0 - City of Windsor - Official Plan
- Figure 6.0 - Town of Tecumseh (formerly Township of Sandwich South) - Oldcastle Hamlet - Official Plan

4.1 Natural Features

Lands surrounding Sixth Concession Road in the vicinity of Dougall Parkway have experienced significant development pressure in the past 5 years. Since the surrounding area was primarily in agricultural use prior to development, there are no identifiable significant natural areas remaining. All existing agricultural land, the majority of which is located in the North Roseland Planning Area, is scheduled for residential development.

4.2 Social Environment

The following is a summary of the social environment found in the Study Area. Statistics Canada 1996 Census Data is included in Appendix "E' for reference.

4.2.1 Residential Land Use

Lands in the immediate Study Area consist of several residential dwellings:

North of Dougall Parkway: On the west side of Sixth Concession Road is 4245 Sixth Concession Road, a larger ranch style, single detached dwelling built in the late 1960's and is located approximately 45 metres (310 feet) from the existing bridge. Located on the east side of Sixth Concession Road is 4190 Sixth Concession Road, an early 20th century farmhouse, and 4170 Sixth Concession Road, a late 19th century farmhouse.

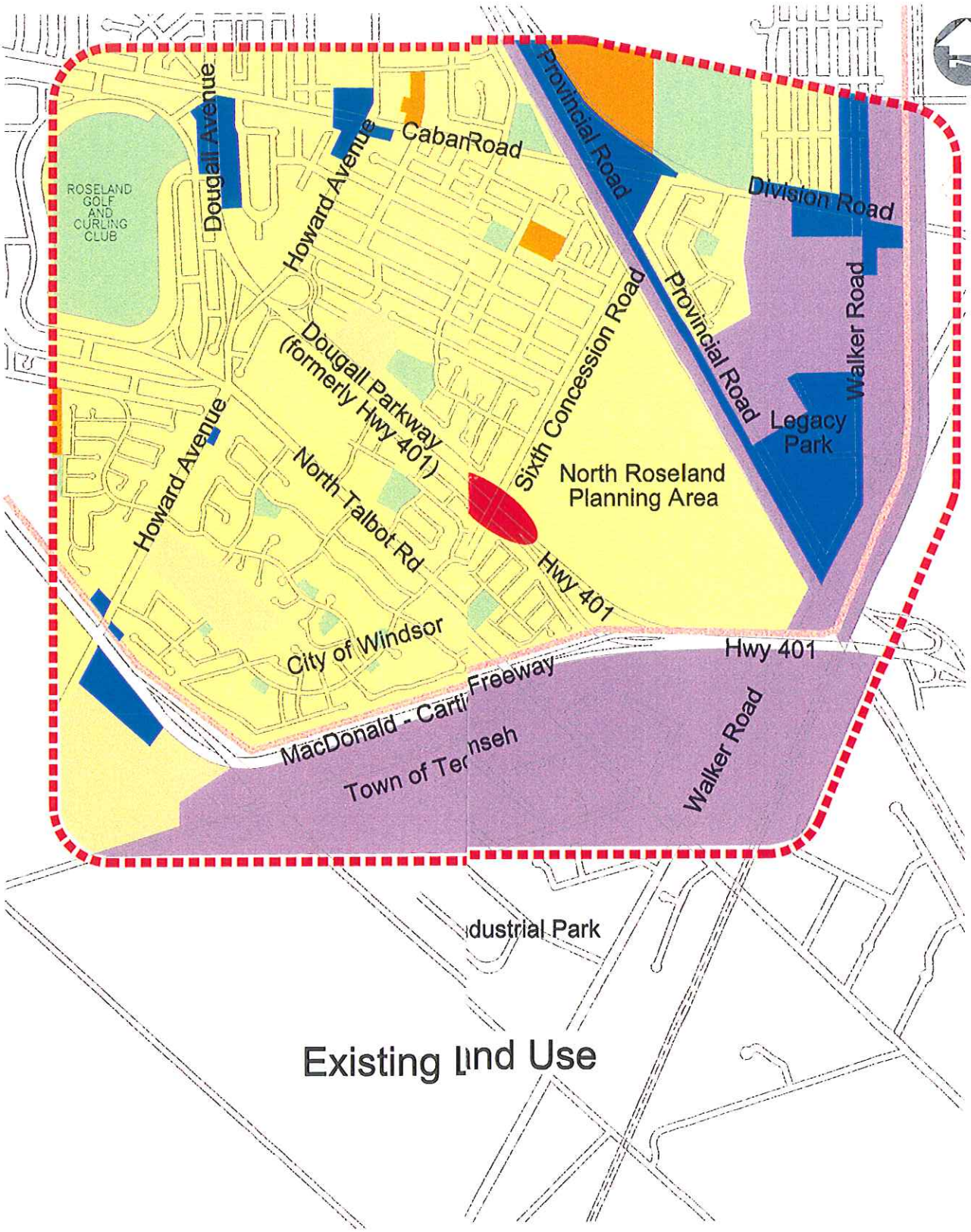

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FIGURE 4.0
Existing & Proposed Land Use
N.T.S.
Dougall Parkway at Sixth Concession Road
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City of Windsor

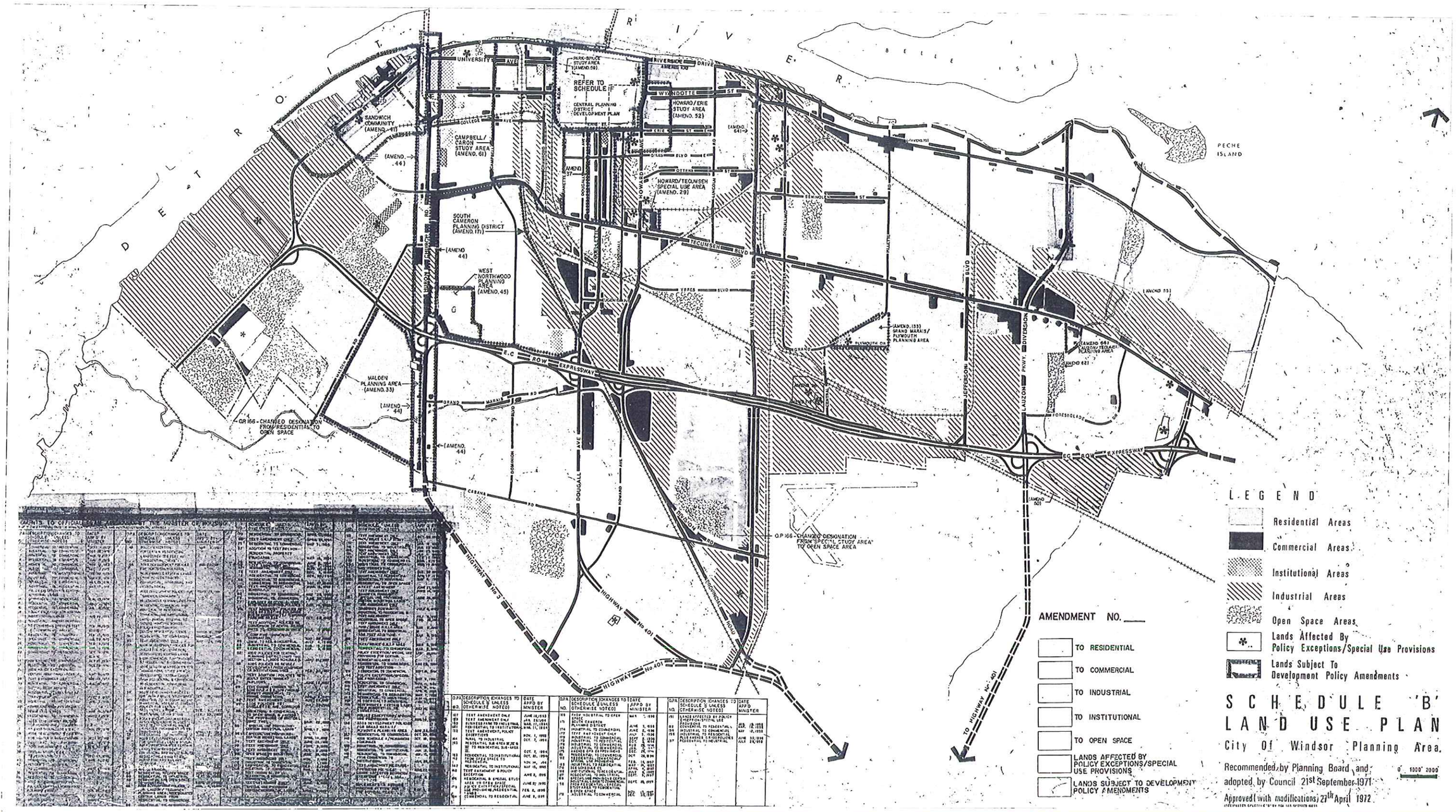

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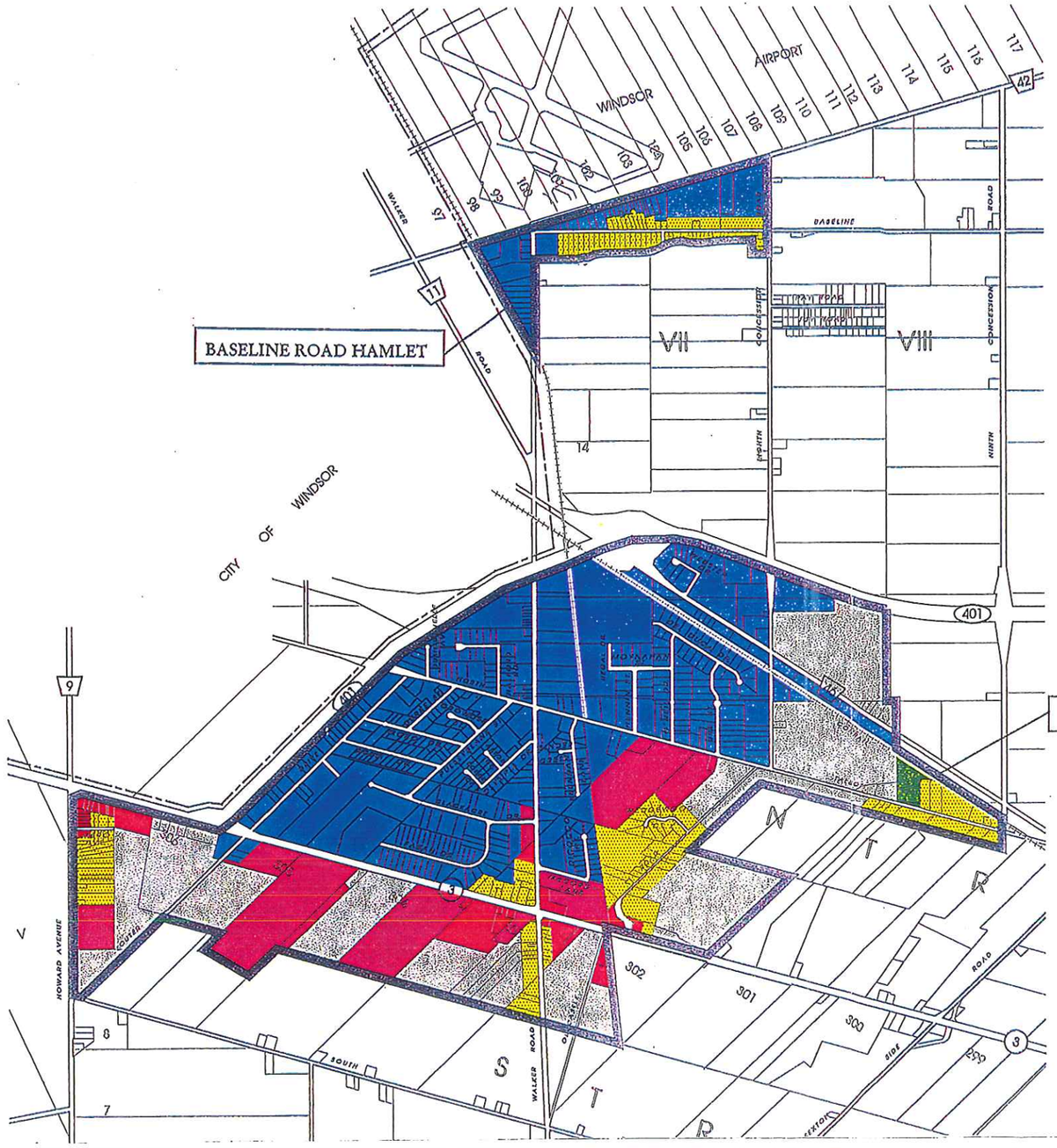
FIGURE 5.0
City of Windsor - Official Plan
N.T.S.
Dougall Avenue at 6th Concession Road
Environmental Study Report
City of Windsor

SCHEDULE "A-2"
TOWNSHIP OF SANDWICH SOUTH
OFFICIAL PLAN
OLDCASTLE HAMLET &
BASELINE ROAD HAMLET
URBAN AREA
LAND USE PLAN



- Urban Area Boundary
- Hamlet Residential
- General Commercial
- Business Park
- Community Facility
- Recreational
- Hamlet Development

prepared by: Prince, Silani & Associates Limited
revised June, 1997 January, 1997 - psa - A - 42008

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FIGURE 6.0
Town of Tecumseh (formerly Township of Sandwich South) - Oldcastle Hamlet - Official Plan
N.T.S.
Dougall Parkway at 6th Concession Road
Environmental Study Report
City of Windsor

South of Dougall Parkway: On the west side of Sixth Concession Road is 4315 Sixth Concession Road. This house is a two storey single detached dwelling and is located approximately 120 metres (400 feet) from the bridge. On the east side of Sixth Concession Road, no homes have frontage on the roadway, however, there are existing townhomes which form part of the Southwood Trails Subdivision which backs onto Sixth Concession Road. The closest townhome in the subdivision is approximately 40 metres (130 feet) from the bridge.

The Study Area in general, is primarily comprised of single detached dwellings located in established neighbourhoods, as well as new developments. Single detached dwelling units range from modest starter homes to high-end executive homes located on large lots. In addition, semi-detached dwellings and townhome dwellings are located within the Study Area.

4.2.2 Parkland

Lands within the Study Area are well serviced by several municipal parks, including an Environmental Study Area and one regionally significant Conservation Area, as listed below:

- Devonwood Conservation Area
- Maple Leaf Park
- Patrick McGuire Park
- Roseland Park
- Holburn Park
- Northwood Lakes Park
- Goldenwood Park
- North Talbot Park
- Lake Como & Parkette
- Lake Girande and Lake Trail Parkette
- Lake Laguna & Parkette
- Wolfe Lake & Parkette
- Kominar Park; and
- Herb Grey Nature Reserve

There is an existing network of off-road bicycle/walking trails within the Southwood Lakes Subdivision. Currently, there are no bicycle/walking trails designated within the immediate Study Area on Sixth Concession Road.

4.3 Economic Environment

4.3.1 Industrial Land Use

There is a significant portion of the Study Area which is either developed or designated for industrial development. Existing industrial uses, located mainly in the Oldcastle Hamlet Urban Area in the Town of Tecumseh (formerly Township of Sandwich South), consist of light and medium industrial operations, often associated with the automobile industry. There are also lands designated for industrial development in the City of Windsor located along Walker Road (north of the Hwy. No. 401) and Provincial Road (west of Walker Road).

The Study Area has experienced significant growth in industrial development within the past 20 years in the form of industrial subdivisions. Industrial operations in the area range in size from one half acre sites to those sites in excess of ten acres.

Lands within the Study Area have been attractive to industrial users for the following reasons:

- Proximity to King's Highway 401.
- Proximity to King's Highway 3, which provides connecting links to Huron Church Road (Ambassador Bridge) and many municipalities in Essex County.
- Proximity to King's Highway 401 (Dougall Avenue and Windsor-Detroit Tunnel)
- Proximity to National Railways for the transport of goods.
- Proximity to major automotive feeder and assembly plants located in the City of Windsor, United States of America and other plants located in Southwestern Ontario.

4.3.2 Commercial Land Use

Commercial land uses in the Study Area are primarily located at the intersection of major roads and consist of service related uses. The majority of the commercial development found in the Study Area is minor in size and is dependant on vehicular traffic. However, there are two major commercial developments which act as a regional draw. They are:

- The Dougall Avenue / Cabana Road West Commercial Node, which provides a wide range of commercial uses including: banking facilities, two strip plazas, Canadian Tire Store, Shoppers Drug Store and other service related uses.

- The Windsor Power Centre (Legacy Park) , located at Walker Road and Provincial Road provides shoppers with a 8 hectare (20 acre) "big box" regional shopping centre. This commercial development is home to the Silver City Theatre (a twelve screen movie theatre), Costco and several restaurants. This site continues to develop and the City is beginning to receive applications for other commercial development in the general area.

4.4 Existing Conditions

4.4.1 Heritage Resources

In consultation with the City of Windsor Heritage Planner, it has been determined that there are no potential or designated heritage structures located on Sixth Concession Road in the Primary Study Area which are included on the Windsor Heritage Properties Inventory (WHPI). However, during the collection of background material for this report, it was noted that there are two residential dwellings located to the north, on the east side of Sixth Concession Road which may have potential historical significance. They are:

- 4170 Sixth Concession Road is a 1.5 storey, clapboard farmhouse dating from the 19th century. The City of Windsor database indicates that the dwelling was constructed in 1928, however, the details surrounding the windows suggest an earlier construction date. Currently, the dwelling is not included on the Windsor Heritage Properties Inventory (WHPI). A field visit to the site suggests that the dwelling has "moderate"

heritage significance (refer to Appendix "F").

- 4190 Sixth Concession Road is a 1.5 storey, aluminum-sided farmhouse dating from the early 20th century. The City of Windsor database indicates that the dwelling was constructed in 1900,. Currently, the dwelling is not included on the Windsor Heritage Properties Inventory (WHPI). A field visit to the site suggests that the dwelling has "ordinary" heritage significance (refer to Appendix "F").

It should be noted that neither of these dwellings will be impacted by the preferred solution based on their location outside the Primary Study Area.

4.4.2 Noise

A Noise Impact Analysis was undertaken for the proposed improvements by Valcoustics Canada Ltd. dated April 13, 1999, in which it was concluded that roadway noise levels are generally below the Ministry of the Environment and Ministry of Transportation protocol criterion. In the case of noise levels related to increased traffic on Dougall Parkway, the reduction in the posted speed limit from 100 km/h to 80 km/h was identified as a requirement for satisfying the above criterion. Accordingly, noise impacts have not been identified as an issue adjacent to the Primary Study Area. A copy of the report is included in Appendix "G".

4.5 Planned Land Uses

Planned land uses within the Secondary Study Area are shown on the applicable land use map included in this report as follows:

- Figure 4.0 - Existing and Proposed Land Uses
- Figure 5.0 - City of Windsor - Official Plan
- Figure 6.0 - Town of Tecumseh (formerly Township of Sandwich South) - Oldcastle Hamlet - Official Plan

The City has recently completed the **North Roseland Phase 2 Secondary Plan** (1997). These lands are located north of Highway No. 401 and east of Sixth Concession Road (refer to Figure 1.0 and Figure 4.0) and are designated for low density, residential development. The remaining lands adjacent

to the Primary Study Area are also designated for low density, residential development and include future phases of the Northwood Lakes Subdivision (Penwest Development), located south of Dougall Parkway west of Sixth Concession Road, the GFD Development, located north of Dougall Parkway west of Sixth Concession Road, and the Southwood Trails Subdivision, located south of Highway No. 401 on the east side of Sixth Concession Road. The lands mentioned above are in various stages of development, from the Draft Plan of Subdivision approval to servicing of the lands and construction of dwellings.

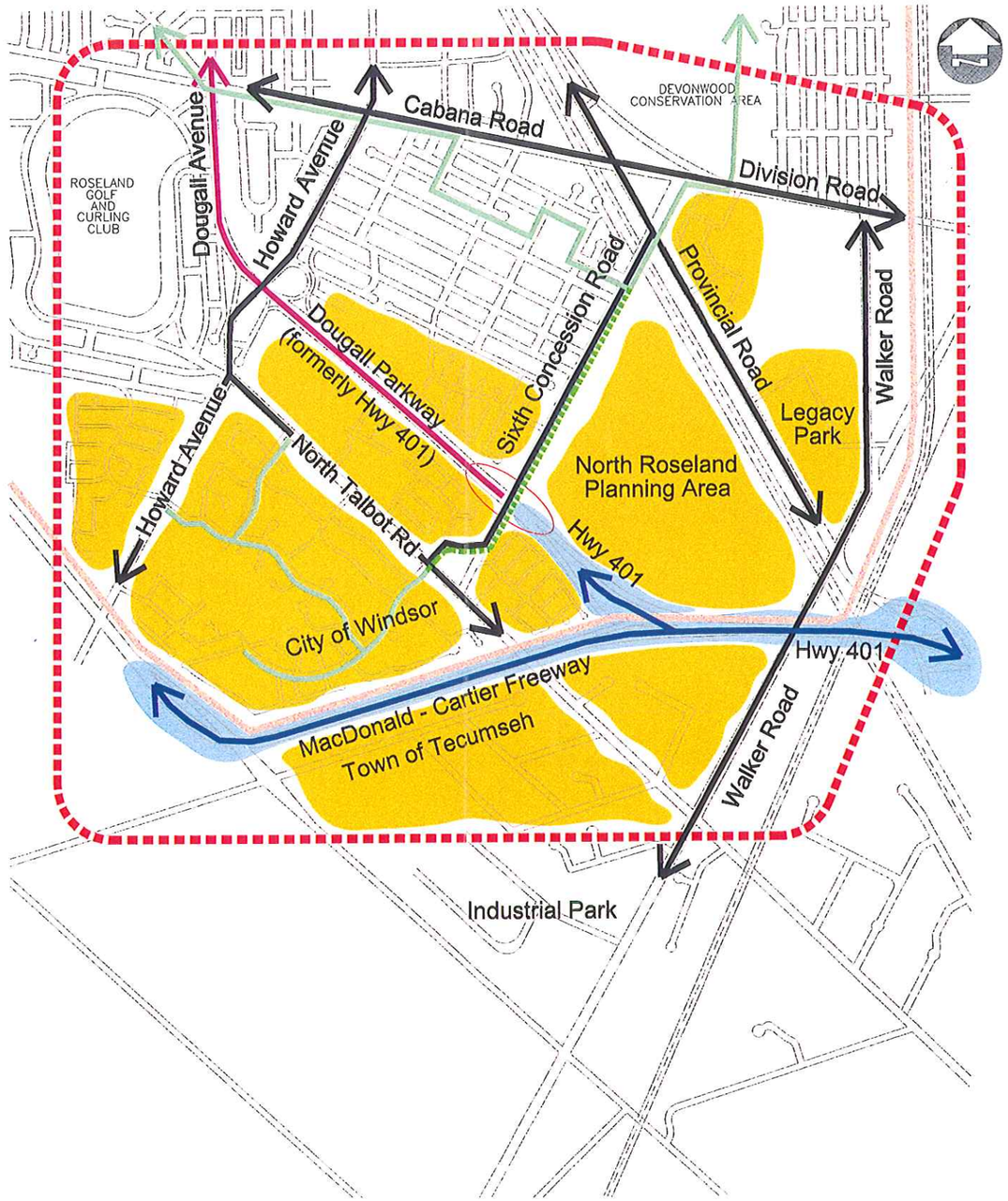
The Oldcastle Hamlet Area is predominantly designated industrial and will continue to develop accordingly with limited service related commercial development occurring along the Walker Road Corridor (refer to Figure 6.0).

4.6 Issues, Opportunities and Constraints

In reviewing the existing and future conditions, several issues, opportunities and constraints became evident in the review of background information. Primarily, development pressure in the Study Area has led to an increase in vehicular traffic in the area. The result suggests that due to residential, commercial and industrial growth, many of the roadways require further study prior to upgrading, as shown in Figure 7.0.

These studies would follow the Class Environmental Assessment Process and may include similar solutions (ie., road widening and intersection improvements). Also, there were a number of constraints on the study including the portion of the Highway No. 401, east of Sixth Concession Road, which remain in Provincial ownership. As well, the on-going Highway No. 401 Class Environmental Assessment is currently being undertaken by the Province south of the Study Area (refer to Figure 7.0).

The following sections will address the issues/condition of other roadways within the Study Area.



DILLON CONSULTING
98-5563-01-01
November 1998

Site location
Study area
Municipal Boundary

Legend:
- Study in progress (Provincial Government)
- Roadways which require further study
- Direct Route to City Centre and E.C. Row Expressway
- Recent & future development
- Provincial ownership
- Existing bike / walking trails
- Future bike / walking trails

FIGURE 7.0
Issues, Opportunities & Constraints
N.T.S.
Dougall Parkway at Sixth Concession Road
Environmental Study Report
City of Windsor

4.7 Transportation

The major roadways within the Study Area are illustrated on Figure 2.0. The following Table 4-1 summarizes the respective roadway classifications based on the City of Windsor's Official Plan (as amended to July 1996).

Table 4-1 Summary of Major Roadway Classifications

Roadway	From	To	Classification
Dougall Pkwy/Hwy. 401	Howard Avenue	Easterly	Expressway [0]
Dougall Avenue	Howard Avenue	Northerly	Class 2 Arterial
Howard Avenue	North Talbot Road	Northerly	Class 2 Arterial
Provincial Road	North Limit of Study Area	East Limit of Study Area	Class 2 Arterial
Cabana/Division Road	West Limit of Study Area	East Limit of Study Area	Class 2 Arterial
Sixth Concession Road	Provincial Road	North Talbot Rd.	Class 1 Collector
North Talbot Road	Howard Avenue	Easterly	Class 1 Collector

[0] - Classified as "Controlled Access Highway" in City of Windsor's Draft Official Plan (October 26, 1998).

As indicated in Table 4-1, the Sixth Concession Road corridor is defined as a Class 1 Collector. It provides a through route between North Talbot Road and Provincial Road, as well as access to the existing residential area bounded by Howard Avenue to the west, Cabana Road to the north, Sixth Concession Road to the east and Dougall Parkway to the south.

4.7.1 Existing Roadway Characteristics

The characteristics of the existing roadways are summarized in Table 4-2.

Table 4-2 - Summary of Existing Roadway Conditions

Roadway	From	To	Existing Cross-section
Dougall Avenue	Howard Avenue	Roseland Drive	4 lane, semi-urban
	Roseland Drive	Cabana Road	5 lane, urban
Howard Avenue	North Talbot Road	Cabana Road	2 lane, rural
Sixth Concession Road	Division Road	North Talbot Rd.	2 lane, rural
Provincial Road	North Limit of Study Area	East Limit of Study Area	2 lane, rural
Cabana Road	West Limit of Study Area	Howard Avenue	2 lane, urban
Cabana/Division Road	Howard Avenue	East Limit of Study Area	2 lane, rural
Dougall Pkwy/Hwy. 401	Howard Avenue	Easterly	4 lane, rural divided highway
North Talbot Road	Howard Avenue	Walker Road	2 lane, rural

4.7.2 Existing and Projected Traffic Volumes

As part of this Class EA, Dillon reviewed the most recent traffic impact studies to confirm the projected traffic growth and associated impact on the road network. A copy of the findings from this review are included in Appendix "H".

The following Table 4-3 summarizes the average daily traffic (vpd) for both the existing and future conditions for select roadways in the Study Area.

Table 4-3 - Summary of Existing and Future Traffic Volumes

			Average Traffic Volume (vpd)	
Roadway	**From**	**To**	**Existing**	**Future**
Dougall Ave	Cabana Rd.	Howard Ave	19,300	26,240
Howard Ave	Cabana Rd.	Dougall Pkwy	10,700	18,020
	Dougall Pkwy	North Talbot Rd.	16,550	29,780
Sixth Concession Rd.	Provincial Rd.	Dougall Pkwy	3,500	16,110
	Dougall Pkwy	North Talbot Rd.	2,900	9,290
Cabana Rd.	Dougall Ave	Howard Ave	14,000	24,340
	Howard Ave	Provincial Rd.	10,500	22,570
Dougall Pkwy [1]	Howard Ave	Sixth Concession Rd.	4,200	5,450
North Talbot Rd.	Howard Ave	Sixth Concession Rd.	5,200	12,240
	Sixth Concession Rd.	Easterly	5,000	15,780

[1] - Future traffic volume based on existing roadway patterns (i.e. no interchange at Dougall Parkway and Sixth Concession Road))

As indicated in the Table 4-3, a significant increase in traffic volume is anticipated as a result of development in the Roseland Planning District.

4.7.3 Level of Service

The measure of level of service (LOS) is based on the ratio of traffic volume expected to use the roadway versus the theoretical capacity of the roadway. A six-letter scale is commonly used to classify the LOS of a roadway ranging from A (excellent) through F (failure). When a roadway is operating at capacity, it is classified as a LOS E. The following Table 4-4 summarizes the LOS at select intersections in the Study Area based on the results of our analysis.

Table 4-4 - Summary of LOS for Various Intersections

Intersection	Existing Volume		Future Volume (Year 2016)	
	v/c Ratio	LOS	v/c Ratio	LOS
Dougall Ave & Cabana Rd.	0.335	D	0.791	E
Howard Ave & Cabana Rd.	0.759	E	1.287	F
Provincial Rd. & Cabana Rd.	0.644	D	1.638	F
Sixth Conc. Rd. & Provincial Rd.	0.525	D	3.001	F
Howard Ave & North Talbot Rd.	0.736	E	2.491	F
Sixth Conc. Rd. & North Talbot Rd.	0.441	D	1.230	F

Based on the above, it is evident that the majority of intersections within the Study Area would experience failure at some point within the 20 year design horizon.

4.7.4 Public Transit

The only Transit Windsor bus route within the Study Area is the Dougall 6. This route includes the following streets within the Study Area.

1. Dougall Avenue north of Cabana Road,
2. Cabana Road between Dougall Avenue and Howard Avenue and
3. Howard Avenue from Cabana Road southerly.

The area School Boards were contacted to confirm any concerns regarding school bus traffic within the Study Area, particularly along Sixth Concession Road. No comments have been received to date.

4.7.5 Railways

The only railway with the Study Area is the Canada Southern Railway which is operated by the Canadian National/Canadian Pacific Railways (CN/CP). The railway is located parallel to Provincial Road, approximately 100 metres to the south. There are two at-grade crossings, one located at Cabana Road and the other at Sixth Concession Road.

4.7.6 Pedestrians

Pedestrian activity was not recorded as part of this study, however, Dougall Avenue, Howard Avenue and Cabana Road include sidewalks for pedestrian movements within the Study Area. Currently there are no sidewalks on Sixth Concession Road and North Talbot Road.

4.7.7 Cyclists

Presently, there are no off-road bicycle trails within the Study Area with the exception of the Southwood Lakes Development.

Based on comments received from the Parks and Recreation Department of the City of Windsor and the Windsor Bicycle Committee (refer to Appendix "C"), it is our understanding that an update to the 1990 Bicycle Use Development Study (BUDS) is to be completed in 1999 under the direction of the City of Windsor Traffic Engineering Department. At this time, Sixth Concession Road is not designated as a bikeway/recreation way in the City of Windsor's Official Plan, although it is expected that the updated Study will address the function of Sixth Concession Road as a bicycle route based on the connection provided between the Southwood Lakes bikeway system and the Devonwood Conservation Area, Holburn Park, Roseland Park, Patrick McGuire Park and the future North Roseland Planning Area. Any "preferred solution" chosen to address the problem statement should not preclude existing or future on-road cyclist and pedestrian movement within the Sixth Concession Road corridor.

4.8 Existing Infrastructure

The entire Study Area is serviced with a full range of municipal services including storm and sanitary sewers, watermains, hydro, gas, telephone and cable television. The following table summarizes the existing infrastructure in the vicinity of the Primary Study Area.

Table 4-5 - Summary of Existing Infrastructure

Type of Infrastructure	Description and Location
Storm Drainage	• Open ditches on the east and west side of Sixth Concession Road between North Talbot Road and Dougall Parkway. • Open ditch on the east side of Sixth Concession Road between Dougall Parkway and Provincial Road • Swales and open ditches in boulevards and median of Dougall Parkway. • Box culvert under Dougall Parkway right-of-way along the east limit of Sixth Concession Road.
Sanitary Sewer	• Sanitary sewers along Sixth Concession Road between Morand Street and Provincial Road.
Watermain	• 150 mm diameter watermain along the west side of Sixth Concession Road from approx. 60 metres north of Socrates Crescent to approx. 150 metres south of Wallace Avenue.
Hydro	• 27.6 kVa, 3 Phase Primary overhead hydro along the west side of Sixth Concession Road from North Talbot Road to Provincial Road (including crossing over Dougall Parkway). • 120/240 V, Secondary overhead hydro at various locations along Sixth Concession Road providing service to existing residences.
Gas	• 50 mm diameter gas main along the west side of Sixth Concession Road from North Talbot Road to just north of Scofield Avenue and from Ducharme Street to Socrates Crescent.
Telephone	• overhead along the west side of Sixth Concession Road from North Talbot to the south side of Dougall Parkway • overhead along the west side of Sixth Concession Road from the north side of Dougall Parkway northerly (to Provincial Road)
Cable Television	• overhead along the west side of Sixth Concession Road from just north of Dougall Parkway to Morand Street. • underground along the west side of Sixth Concession Road from Morand Street to Socrates Crescent.
Traffic Control	• Traffic control infrastructure at the intersection of Sixth Concession Road and Provincial Road.

5.0 IDENTIFICATION AND EVALUATION OF ALTERNATIVE SOLUTIONS

The previous sections provided the problem statement and a description of the existing environment within the Study Area. This section describes alternative solutions to address the identified problem, including an evaluation of the alternatives based on the potential impact of each on the natural, social and economic environments.

5.1 Identification of Alternative Solutions

Following is a list of possible solutions, as shown on Table 5-1.

- **Alternative No. 1** - "Do Nothing"
- **Alternative No. 2** - Improve signing and traffic control
- **Alternative No. 3** - Improve transit
- **Alternative No. 4** - Upgrade alternate routes in the Study Area, including intersection improvements.
- **Alternative No. 5** - Construct a new interchange/intersection at Sixth Concession Road and Dougall Parkway.

5.2 Assessment and Evaluation of Alternative Solutions

The alternative solutions identified at this stage in the planning process were evaluated based on their individual and/or collective abilities to effectively solve the identified problem, the impact on the environment and a relative cost comparison. The following factor groups were used to evaluate the alternative solutions, as shown on Table 5-1:

- Social and Land Use Impacts
- Traffic Service Impacts
- Pedestrian and Cyclist Impacts
- Social Impacts
- Project Costs

TABLE 5-1
IDENTIFICATION AND EVALUATION OF ALTERNATIVE SOLUTIONS

FACTOR GROUPS/ EVALUATION FACTORS	ALTERNATIVE NO. 1 DO NOTHING (Existing Conditions)	ALTERNATIVE NO. 2 IMPROVE SIGNING & TRAFFIC CONTROL (ALTERNATIVE ROUTES)	ALTERNATIVE NO. 3 IMPROVE TRANSIT	ALTERNATIVE NO. 4 UPGRADE ALTERNATIVE ROUTES	ALTERNATIVE NO. 5 IMPROVE INTERCHANGE DOUGALL PARKWAY/ SIXTH CONCESSION RD.
A. Social/Land Use Impact					
• Impact on adjacent neighbourhoods	• no change	• potential for increased traffic in other neighbourhoods.	• no change	• potential for increased traffic in other neighbourhoods.	• minimal impact
• Disruption to existing residents	• no change	• limited impact on adjacent neighbourhoods.	• no change	• limited impact	• no change
• Disruption to business	• no change	• minimal impact	• no change	• minimal impact	• no change
• Number of businesses/residents displaced	• no change	• no change	• no change	• may require property acquisition, which may result in displacement (further study required).	• may require limited property acquisition, which may result in displacement (further study required).
• Visual impact	• no change	• no change	• no change	• potential for change in visual characteristics • opportunity for limited street landscaping.	• potential for change in visual characteristics. • opportunity for limited street landscaping.
• Property requirements	• no change	• no change	• no change	• may require property acquisition (further study required).	• may require limited property acquisition (further study required).
B. Traffic/Service Impacts					
• Level of service	• reduction in level of service.	• minimal increase in level of service.	• may result in minimal improvement in level of service.	• will improve level of service.	• will improve level of service.
• Traffic flow	• traffic flow congestion will worsen over time.	• minimal improvement.	• minimal improvement	• will improve traffic flow.	• will improve traffic flow.
• Safety	• reduction in vehicular safety resulting from increase traffic.	• moderate improvement in vehicular safety.	• minimal improvement	• will improve in vehicular safety.	• will improve vehicular safety
C. Pedestrian/Cyclist Impact					
• Convenience (cycling)	• no improvement to cycling convenience.	• minimal improvement to cycling convenience.	• N/A	• improvement to cycling convenience.	• improvement to cycling convenience.
• Convenience (pedestrian)	• no improvement to pedestrian convenience.	• minimal improvement to pedestrian convenience.	• N/A	• improvement to pedestrian convenience.	• improvement to pedestrian convenience.
• Safety (cycling)	• no improvement to cycling safety.	• minimal improvement to cycling safety.	• N/A	• improvement to cycling safety.	• improvement to cycling safety.
• Safety (pedestrian)	• no improvement to pedestrian safety.	• no improvement to pedestrian safety.	• minimal decrease	• potential improvement to pedestrian safety.	• moderate improvement to cycling safety.
D. Social Impact					
• Noise impact	• noise levels may increase.	• no change	• minimal decrease	• noise levels may increase.	• noise level will increase.

TABLE 5-1
IDENTIFICATION AND EVALUATION OF ALTERNATIVE SOLUTIONS

FACTOR GROUPS/ EVALUATION FACTORS	ALTERNATIVE NO. 1 DO NOTHING (Existing Conditions)	ALTERNATIVE NO. 2 IMPROVE SIGNING & TRAFFIC CONTROL (ALTERNATIVE ROUTES)	ALTERNATIVE NO. 3 IMPROVE TRANSIT	ALTERNATIVE NO. 4 UPGRADE ALTERNATIVE ROUTES	ALTERNATIVE NO. 5 IMPROVE INTERCHANGE DOUGALL PARKWAY/ SIXTH CONCESSION RD.
• Air quality impacts	• air quality may be reduced due to increase in traffic	• air quality may be reduced due to traffic increase.	• minimal improvement	• air quality may be reduced due to increase in traffic.	• air quality may be reduced due to increase in traffic.
E. Project Costs • Estimated capital costs (including potential property and utility relocation).	• low	• low	• low	• high	• moderate
ADVANTAGES	• relatively low cost (only required for minor upgrades). • no cost incurred for property acquisition. • minimal change to adjacent land uses.	• relatively low cost. • low to moderate improvement to vehicular, cyclist and pedestrian safety and convenience.	• better utilization of existing road network. • minimal reduction in traffic flow. • minimal reduction in noise impact. • minimal improvement in air quality. • low cost • integration within existing neighbourhood.	• satisfies capacity requirement for planning period. • may limit traffic infiltration into residential neighbourhoods. • opportunity for limited landscaping on arterial/collector roadways. • will improve level of service. • will improve traffic flow. • will improve vehicular, cyclist and pedestrian safety and convenience.	• will improve traffic flow on surrounding roadways. • improved level of service on adjacent roadways. • will improve vehicular, pedestrian, cyclist and pedestrian safety and convenience. • moderate cost • access granted to Dougall Avenue via Dougall Parkway from Sixth Concession. • utilities existing capacity on Dougall Parkway.
DISADVANTAGES	• fails to adequately address the capacity problems in the area. • reduction in traffic flow. • reduction in traffic, cyclist and pedestrian safety and convenience.	• minimal improvement to traffic flow. • minimal improvement to level of service. • fails to adequately address the capacity problems in the area.	• only feasible when approaching full development of study area. • fails to adequately address the capacity problems in the area.	• high cost (dependant on municipal financing). • requires long term implementation to facilitate necessary improvements.	• improvements will not address long term traffic requirements for the larger study area. • property acquisition may be required.

TABLE 5-1
IDENTIFICATION AND EVALUATION OF ALTERNATIVE SOLUTIONS

FACTOR GROUPS/ EVALUATION FACTORS	ALTERNATIVE NO. 1 DO NOTHING (Existing Conditions)	ALTERNATIVE NO. 2 IMPROVE SIGNING & TRAFFIC CONTROL (ALTERNATIVE ROUTES)	ALTERNATIVE NO. 3 IMPROVE TRANSIT	ALTERNATIVE NO. 4 UPGRADE ALTERNATIVE ROUTES	ALTERNATIVE NO. 5 IMPROVE INTERCHANGE DOUGALL PARKWAY/ SIXTH CONCESSION RD.
RECOMMENDATION	• fails to adequately address increases in traffic capacity problems in the area.	• fails to adequately address increases in traffic capacity problems in the area.	• fails to change traffic flows. • fails to adequately address increases in traffic capacity problems in the area.	• adequately addresses increases in traffic capacity problems in the area, however, requires further comprehensive study. • further study dependant on Capital Works Budget. • cost high and must be implemented over the long term.	• adequately addresses increases in traffic capacity problems in the area. • costs moderate and can be implemented over short term.

5.3 Discussion

Based on the evaluation outlined in Table 5-1 as well as the results of the Transportation Study included in Appendix H, Alternative No. 4 and Alternative No. 5 are the only solutions that adequately address the problems associated with the projected traffic volume increase in the Study Area.

In addition to providing immediate LOS improvements at various intersections, Alternative No. 5 results in a reduction of the volume of traffic on various roadways within the Study Area, including North Talbot Road and Cabana Road. In the longer term, this redistribution of traffic will not only serve to reduce the scope of the intersection improvements, but will also delay the timing for these improvements.

Although Alternative No. 4 alone would result in the proper operation of the affected intersections, the increasing conflicts resulting from the growth in traffic in the residential neighbourhoods on North Talbot Road and Cabana Road are not addressed.

5.4 Recommended Solution

Based on the evaluation of the potential alternative solutions described in the previous sections, the recommended solution is Alternative No. 5 - Construction of a new interchange/intersection at Sixth Concession Road and Dougall Parkway.

5.5 Public and Agency Input

In keeping with the Class EA requirements, four points of contact were incorporated in this Study to facilitate input from the public and affected agencies, as follows:

- Notice of Public Information Centre (November 25, 1998)
- Notice of Project Initiation (November 25, 1998)
- Public Information Centre (December 9, 1998)
- Notice of Completion (June 9, 1999).

Comments received at the Public Information Centre, held at Roseland Golf and Curling Club, have been included for reference. A summary of those comments and responses to a general information questionnaire can also be found in Appendix "B".

In addition to the above points of public contact, various meetings and telephone discussions were held with individual members of the public and affected agencies. A copy of all related correspondence is included in Appendix "C".

5.6 Preferred Solution

At this stage, the intent of the Class Environmental Assessment process is to investigate and select a preferred alternative solution to address the identified problem. The preferred solution should achieve a balance between solving the problem and minimizing the associated environmental impacts.

Based on the evaluation of the alternative solutions including public and review agency input, the preferred solution includes construction of an interchange or intersection at Sixth Concession Road and Dougall Parkway. The preferred solution is defined as a Schedule "C" Activity according to the Class Environmental Assessment for Municipal Road Projects. Accordingly, Phase 3 of the Class EA process was undertaken to develop alternative design concepts which incorporate the preferred alternative solution. The following sections document Phase 3 of the Class EA planning process.

6.2 Assessment and Evaluation of Alternative Design Options

Each of the alternative design options was evaluated to determine their effectiveness in addressing the problem statement using the following factor groups.

- Traffic Service Impacts including level of service, traffic flow and safety;
- Pedestrian Mode Impacts including convenience and safety;
- Cycling Mode Impacts including convenience and safety;
- Land Use Impacts including compatibility with existing/proposed land use, change of existing land use and compatibility with land use policies;
- Social Impacts including loss of property, noise impacts and visual impacts;
- Property Acquisition including municipal property requirements; and
- Project Costs.

The evaluation of the alternative design options using the factor groups and evaluation factors is presented in Table 6-2. The alternative design options were generally assessed in a qualitative manner based on field observations and through detailed review of published studies, policy guidelines and other secondary sources. A noise impact study and transportation assessment were also undertaken to supplement existing data (Appendix "G" and "H", respectively). The evaluation also took into consideration the potential for mitigation.

As part of the assessment and evaluation process the option of mirroring the improvements on the Highway No. 401 side of the existing bridge was reviewed and researched. Based on future traffic generation, existing and proposed development and discussion with municipal staff, it was determined that the "mirroring" of improvements would not be warranted in the design horizon (2016). The requirements for mirroring of the ramps are outlined in correspondence included in Appendix C. Presently proposed ramps can be utilized for emergency evacuation purposes as an alternative to mirroring the ramps.

Table 6-2
Identification and Evaluation of Alternative Design Options

Factor Groups/Evaluation Factors	Option 1A - E/W Ramps With Earth Berms and Channelized Right Turn Lane	Option 1B - E/W Ramps With Earth Berms and Auxiliary Right Turn Lane	Option 2A - E/W Ramps With Retaining Walls (Inside) and Channelized Right Turn Lane	Option 2B - E/W Ramps With Retaining Walls and Auxiliary Right Turn Lane	Option 3A - E/W Ramps With Retaining Walls (Outside) and Channelized Right Turn Lane	Option 3B - E/W Ramps With Retaining Walls (Outside) and Auxiliary Right Turn Lane	Option 4 - With West Parclo Loop and East Ramp With Retaining Wall	Option 5 - At Grade Intersection
Traffic Service Impact • Level of Service • Traffic Flow • Safety	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will improve traffic flow and accommodate traffic to/from Dougall Parkway. • Improvement in vehicular safety.	• Will improve level of service to accommodate future traffic volumes. • Will reduce traffic flow. • Will accommodate east and westbound traffic movements to/from Dougall Parkway and Highway 401, via Highway 3B. • Reduction in safety vehicular.
Pedestrian Mode Impacts • Convenience • Safety	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Improvement to pedestrian convenience. • Improvement to pedestrian safety.	• Reduction to pedestrian convenience. • Reduction to pedestrian safety.
Cycling Mode Impacts • Convenience • Safety	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Improvement to cycling comfort and convenience. • Improvement to cycling safety.	• Reduction to cycling convenience. • Reduction to cycling safety.
Land Use Impacts • Compatibility with existing/proposed land use. • Change existing proposal land use. • Compatibility with land use policies.	• Compatible with existing and proposed residential land uses. • Minimal impact on existing and proposed residential land uses. • Compatible with land use policies.	• Compatible with existing and proposed residential land uses. • Minimal impact on existing and proposed residential land uses. • Compatible with land use policies.	• Compatible with existing and proposed residential land uses. • Minimal impact on existing and proposed residential land uses. • Compatible with land use policies.	• Compatible with existing and proposed residential land uses. • Minimal impact on existing and proposed residential land uses. • Compatible with land use policies.	• Compatible with existing and proposed residential land uses. • Minimal impact on existing and proposed residential land uses. • Compatible with land use policies.	• Compatible with existing and proposed residential uses. • No impact on existing and proposed residential uses. • Compatible with land use policies.	• Compatible with existing and proposed land uses. • Significant impact on existing and proposed residential land uses. • Not compatible with land use policies.	• Compatible with existing and proposed land uses. • No impact on existing and proposed land uses. • Compatible with land use policies.
Social Impacts • Loss of Property • Noise Impacts • Visual Impact	• Moderate loss of property (Penwest Development and 4245 Sixth Concession). • Minimum increase in noise level. • Minimal increase in negative visual impact on adjacent and proposed residential uses.	• Moderate loss of property (Penwest Development and 4245 Sixth Concession). • Minimum increase in noise level. • Minimal increase in negative visual impact on adjacent and proposed residential uses. • Loss of tree line at 4245 Sixth Concession Road.	• Minimal loss of property. • Minimal increase in noise level. • Minimal increase in negative visual impact on adjacent and proposed residential uses.	• No loss of property. • Minimal increase in noise level. • Minimal increase in negative visual impact on adjacent and proposed residential uses.	• No loss of property. • Minimal increase in noise level. • Moderate increase in negative visual on adjacent and proposed residential land uses.	• No loss of property. • Minimal increase in noise level. • Moderate increase in negative visual impact on adjacent and proposed residential land uses.	• Significant loss of property. • Minimum increase in noise levels. • Minimal increase in negative visual impact on adjacent and proposed residential uses.	• No loss of property. • Minimal increase in noise levels. • Reduced visual impact on adjacent residential uses.
Property Acquisition • Municipal Property Requirements	• Private property acquisition required from 4245 Sixth Concession and Penwest Development.	• Private property acquisition required from 4245 Sixth Concession and Penwest Development.	• Private property acquisition required from 4245 Sixth Concession and Penwest Development.	• No property acquisition required.	• No property acquisition required.	• No property acquisition required.	• Private property acquisition required from Penwest Development and Developers in the North Roseland Planning Area.	• No property acquisition required.
Project Costs • Estimated Capital Costs (including property and infrastructure costs)	• Low to moderate.	• Low to moderate.	• Moderate.	• Moderate.	• Moderate.	• Moderate.	• High.	• Low.
Evaluation Summary	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • Moderate loss of property. • Low negative impact to most factor groups. • Low to moderate cost.	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • Moderate loss of property. • Low negative impact to most factor groups. • Low to moderate cost. • **OPTION 1B IS THE RECOMMENDED DESIGN**	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • Moderate loss of property. • Low negative impact to most factor groups. • Moderate cost. • Minimal loss of property.	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • Moderate loss of property. • Low negative impact to most factor groups. • Moderate cost. • Minimal loss of property.	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • Moderate loss of property. • Low negative impact to most factor groups. • Moderate cost. • Minimal loss of property.	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • No loss of property. • Low negative impact to most factor groups. • Moderate cost.	• Satisfies level of service and improves vehicle safety. • Provides efficient flow of traffic. • Significant loss of property. • Low to moderate negative impact to most factor groups. • High cost.	• Satisfies level of services. • Does not improve vehicle safety and provides for lower levels of traffic flow. • No loss of property. • Low to moderate negative impact to most factor groups. • Low cost.

6.2.1 Recommended Design Option

Based on the evaluation of the alternative design options, OPTION 1B was selected as the design which best addresses the problem statement. This design is referred to as the "recommended roadway design" and is illustrated in Figure 8, and described as follows:

- A simple ½ diamond interchange including an eastbound exit ramp and a westbound entrance ramp, both constructed of earthen berms without retaining walls.

- A southbound auxiliary right turn lane on Sixth Concession Road for the westbound entrance ramp.

- A northbound left turn lane on Sixth Concession Road for the westbound entrance ramp.

- Signalized intersections at Sixth Concession Road and the proposed exit and entrance ramps.

- Reconstruction of Sixth Concession Road to include an urban cross-section with barrier curb and gutter and sidewalks on both sides of the road to the limits of the auxiliary northbound left turn and southbound right turn lanes.

- Rural pavement cross-sections are proposed for both exit and entrance ramps, including maintaining a rural cross-section on Dougall Parkway.

This design option was selected for the following reasons:

- Moderate loss of property to the Penwest Development and 4245 Sixth Concession Road. The recommended design recognized the fact that property acquisition would be required to provide an interchange at this location.

- Having a low negative impact in most factor groups of the Assessment and Evaluation of Alternative Design Options, Option 1B presented itself as having the lowest potential impact on the environment.

- Low to moderate capital costs are associated with Option 1B. When preliminary costs for all options are compared to one another, Option 1B is considered to have the lowest relative capital cost.

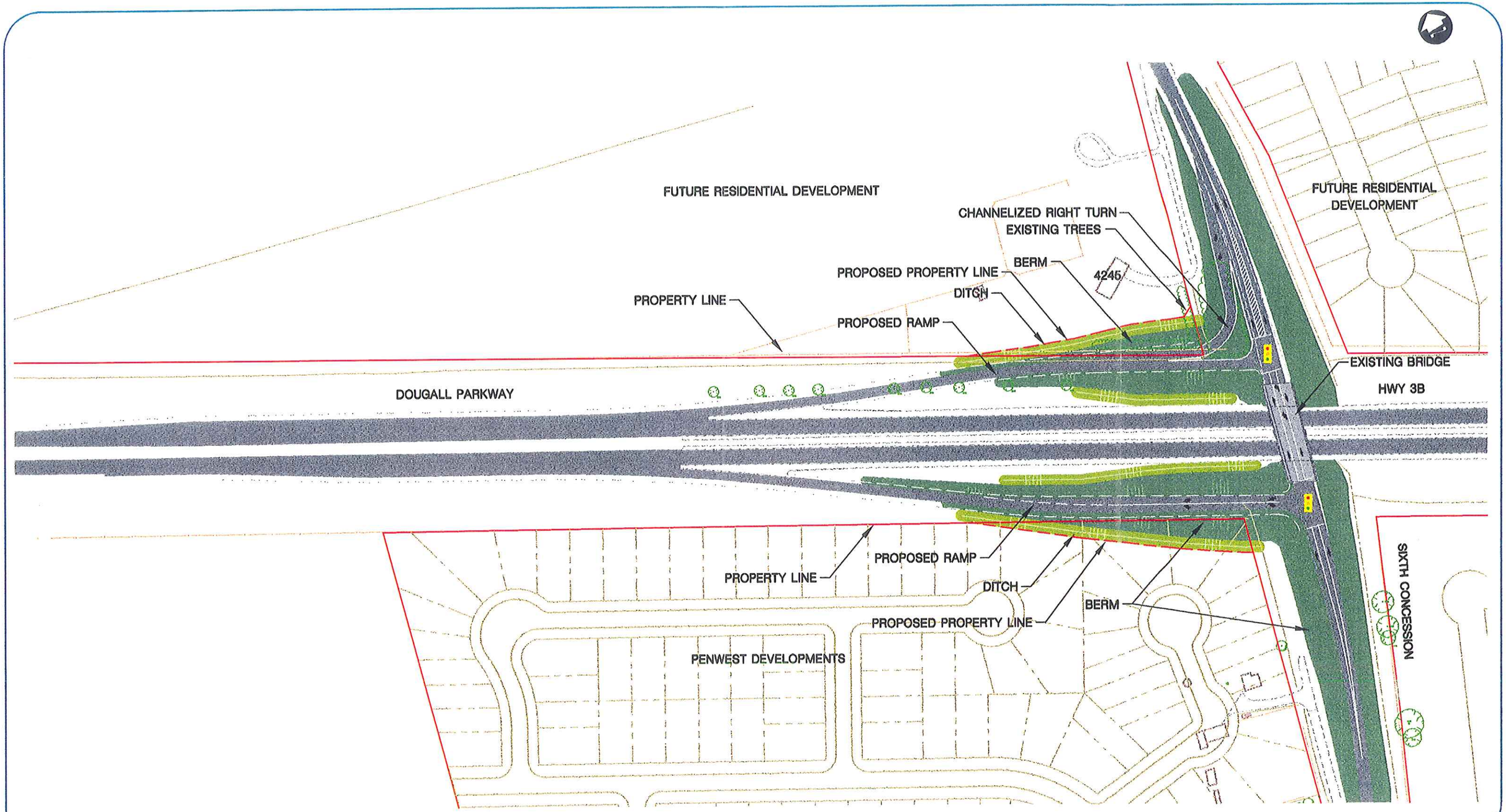


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FIGURE 8.0
Option 1A - East & West Bound Ramps with Earth Berms and Channelized Right Turn Lane
1:2000
Dougall Parkway at 6th Concession Road
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7.0 THE PREFERRED DESIGN

7.1 Description of the Preferred Design

The comments received at the Public Information Centre of December 9, 1998, generally confirmed agreement with the selection of the recommended design. Based on subsequent meetings with the landowners at the northwest and southwest corners of the proposed interchange, modifications were made to the recommended design option to develop a "preferred design" for the Dougall Parkway/Sixth Concession Road interchange, as shown in Figure 9. The detailed design will be finalized following completion of the ESR. The modifications from the recommended design are intended to reduce the required property acquisition, and include the following:

- The entrance and exit ramps were realigned closer to Dougall Parkway.
- Curb and gutter was included where possible to replace the shoulders in the cross-section of the entrance and exit ramps to achieve the above realignment.
- The width of the ditch on the north and south side of both the entrance ramp and exit ramp was reduced to achieve the above realignment.
- Curb and gutter and an asphalt shoulder were added along the outside lanes of Dougall Parkway (between the bullnose of each ramp and the 6th Concession Road overpass) to achieve the above realignment. Catch basins and storm sewers will be required for drainage of Dougall Parkway in this area.

The advantages of the modified design are:

- maintains the integrity of the interchange design;
- reduces the property acquisition requirements for the affected adjoining lands (Penwest and 4245 Sixth Concession Road); and
- controls drainage from impacting adjacent properties.

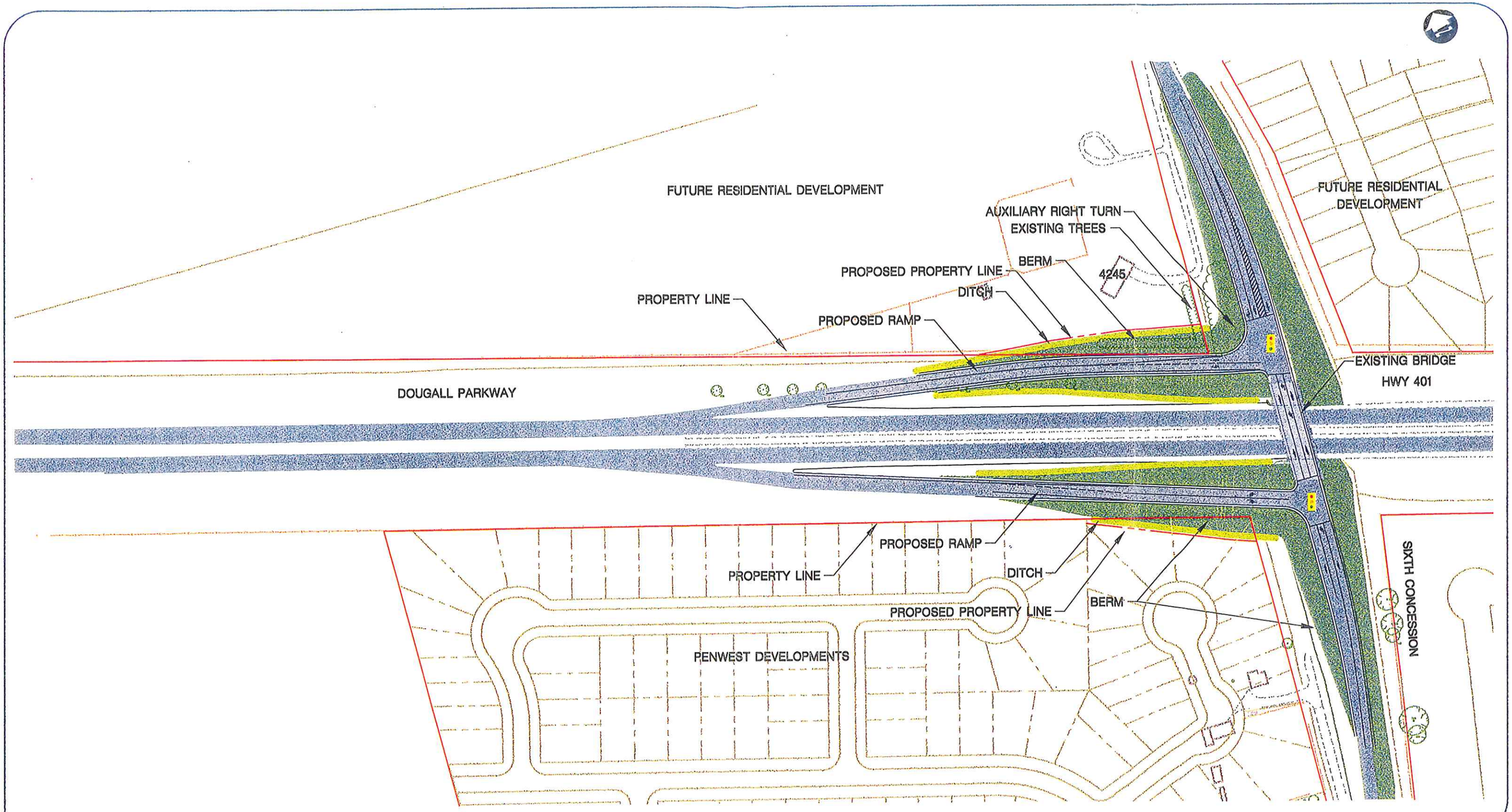

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FIGURE 9.0 - PREFERRED DESIGN
Option 1B - East & West Bound Ramps with Earth Berms and Auxiliary Right Turn Lane
1:2000
Dougall Parkway at 6th Concession Road
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Due to the width of the existing bridge deck on Sixth Concession Road, an on-road dedicated bicycle lane in each direction cannot be provided, however, bicycles are permitted to travel on the roadway, as provided for under the Highway Traffic Act. Alternatively, the City may wish to consider the possibility of providing an off-road bicycle trail along the east side of Sixth Concession Road in the future. In order to facilitate off-road bicycle traffic adjacent to Sixth Concession Road, the City may consider a self-supported dedicated bicycle bridge on the east side of the existing Sixth Concession Road bridge over the Dougall Parkway/Hwy. No. 401. The need for such a structure should be considered at such time as improvements to the remaining portions of Sixth Concession Road are reviewed under a separate Class Environmental Assessment Study. It should be noted that Sixth Concession Road is not currently designated as a bicycle route and no existing bicycle trails are located on or adjacent to the roadway. Accordingly, construction of such a structure spanning Highway No. 401 would be considered premature at this time.

7.1.1 Design Parameters

The following is a summary of the design parameters. The parameters are in accordance with the Ministry of Transportation document entitled "Geometric Design Standards for Ontario Highways".

A. Design Speed

(i)	Dougall Parkway	100 km/hr
(ii)	Sixth Concession Road	70 km/hr
(iii)	Entrance & Exit Ramps	80 km/hr

B. Posted Speed Limit

(i)	Dougall Parkway	80 km/hr
(ii)	Sixth Concession Road	50 km/hr
(iii)	Entrance & Exit Ramps	60 km/hr

C. Roadway Cross-Section

(i)	Dougall Parkway	rural
(ii)	Sixth Concession Road	urban
(iii)	Entrance & Exit Ramps	rural/urban

D. Minimum Horizontal Curve Radius

(i)	Dougall Parkway	n/a
(ii)	Sixth Concession Road	190 m
(iii)	Entrance & Exit Ramps	500 m
(iv)	Intersection Turning Radius	20 m

E. Gradients

•	Minimum	0.35%
•	Maximum	5.50%

F. Minimum Lane Dimensions

(i) Dougall Parkway ..... n/a
(ii) Sixth Concession Road - Urban Cross-section
- Width of Through Lanes 3.65 m

(iii) Exit Ramp
- Length of Taper Lane 85m
- Length of Parallel Lane .. 200m
- Width of Parallel Lane 3.5m

(iv) Entrance Ramp
- Length of Taper Lane ... 85m
- Length of Parallel Lane . 85m
- Width of Parallel Lane . 3.5m
- Length of Storage Lane . 87m

(v) Auxiliary Turning Lanes
- Width of Turning Lanes ..... 3.4 m
- Length of Taper Lane ..... 60.0 m
- Length of Parallel Lane ..... 0.0 m
- Length of Storage varies w/ queue length

G. Shoulder Dimensions

(i) Dougall Parkway
- Width of Right Shoulder 3.0 m
- Width of Left Shoulder ..... 2.5 m

(ii) Exit and Entrance Ramps
- Width of Right Shoulder 2.5 m
- Width of Left Shoulder ..... 1.0 m

7.1.2 Sixth Concession Road Reconstruction

The limits of the reconstruction of Sixth Concession Road were established based on the storage requirements for the northbound left turn land and southbound auxiliary right turn lane required for access to the N,S-W entrance ramp. The limits extend approximately 180 m north of the north limit of the Dougall Parkway right-of-way and approximately 150 m south of the south limit of the right-of-way.

The reconstruction of Sixth Concession Road is proposed to include an urban cross-section with barrier curb and gutter. Sidewalks will also be included on both sides of the roadway. In order to accommodate the proposed cross-section however, rehabilitation of the sidewalk and bridge wall will be required.

7.2 Utility Conflicts

Construction of the proposed interchange directly impacts some of the existing infrastructure in the Dougall Parkway and Sixth Concession Road corridors. The following is a summary of the impact that construction will have on the existing infrastructure, including items that should be addressed with the appropriate authorities during the detailed design and contract preparation phase of the project.

7.2.1 Storm Drainage

Presently, all storm drainage is via open ditches. The proposed reconstruction of Sixth Concession Road would include curb and gutter and sidewalks on both sides of the road. New storm sewers will be required at sometime in the future and consideration could be given to installing these sewers at the time the road is reconstructed. This item will be reviewed during the final design and contract preparation phase of the project.

7.2.2 Sanitary Sewers

There are no existing sanitary sewers in the vicinity of the proposed roadway construction. However, during the detailed design and contract preparation phase of the project, consideration will be given to any future sanitary sewers that may be required to service properties along Sixth Concession Road.

7.2.3 Watermain

There are existing watermains along North Talbot Road and along Sixth Concession Road (from approximately 150 metres south of Wallace Line northerly). The existing watermains are outside the limits of the proposed construction and accordingly, water service will not be impacted. However, consideration should be given to "looping" the existing watermain along Sixth Concession Road with the existing watermain on North Talbot Road. The Windsor Utilities Commission Water (WUC) Department will be consulted during the detailed design and contract preparation phase of the project.

7.2.4 Hydro

Presently, there is a 27.6 kVa, 3 phase, primary overhead cable along the west side of Sixth Concession Road that crosses Dougall Parkway. This hydro cable will have to be relocated in order to accommodate the construction of the proposed interchange and provide adequate overhead clearance.

WUC Hydro was consulted during preparation of this ESR. It was determined that the overhead hydro will likely be relocated.

7.2.5 Gas

There is a 50 mm diameter gas main along the west side of Sixth Concession Road within the limits of the construction. The proposed roadway construction will not impact the existing gas service. However, Union Gas will be consulted during the detailed design and contract preparation phase of the project to determine whether there are any future servicing requirements that should be incorporated into the project.

7.2.6 Telephone

There is overhead cable along the west side of Sixth Concession Road up to the limits of the Dougall Parkway right-of-way. The proposed roadway construction will not impact the existing telephone service. However, Bell Canada will be consulted during the detailed design and contract preparation phase of the project to determine whether there are any future requirements that should be incorporated into the project.

7.2.7 Cable Television

There is an overhead cable along the west side of Sixth Concession Road from the north side of Dougall Parkway to Morand Street. The proposed roadway construction will not impact the existing cable service. However, COGECO will be consulted during the detailed design and contract preparation phase of the project to determine whether there are any future requirements that should be incorporated into the project.

7.2.8 Street Lighting

Street lighting on Sixth Concession Road, including the exit and entrance ramps, is proposed. The lighting intensity is to be designed to current City of Windsor standards for an arterial roadway classification.

7.2.9 Traffic Control Signals

Two new traffic control signals will be required on Sixth Concession Road at both the exit ramp and entrance ramp to address safety based on the restriction to sight lines at this location. The timing of the two signals would be co-ordinated with one other. The details of the traffic signal layout and method of interconnection will be determined in consultation with the City of Windsor's Traffic Engineering Department during the detailed design and contract preparation phase of the project.

7.3 Potential Environmental Impacts and Mitigating Measures

As a part of the planning and design process that has been followed for the construction of an interchange at Dougall Parkway and Sixth Concession Road, potential environmental impacts and proposed mitigating measures have been identified as follows:

7.3.1 Environmental Impacts and Mitigating Measures

As with all construction projects, a certain amount of traffic disruption, as well as problems associated with noise and dust can be anticipated. Measures to address these potential environmental impacts will be identified during the detailed design and contract preparation phase of the project. These measures could include restrictions on the hours of construction operations, lane closures as well as the use of water and calcium chloride to control dust. Access to properties during construction will be maintained wherever possible.

Erosion and sediment control measures should be incorporated in the contract to control the release of sediment into the storm drainage system and adjacent watercourses.

With respect to noise impacts during construction, the following could be addressed in the Contract Documents:

- noise sensitive areas will be identified;
- the Contractor will be required to comply with appropriate municipal by-laws regarding noise emission standards and hours of operation for construction equipment; and
- general noise control measures (not sound level criteria) will be referred to or placed in the Contract Documents.

7.3.2 Property Requirements

The acquisition of private property will be required to accommodate the construction of the exit and entrance ramps for the interchange. The property is required on the north and south side of the Dougall Parkway right-of-way, to the west of Sixth Concession Road. The area of additional property is illustrated in Figure No. 10, and is described below.

- Approximately 2,670 m^2 at the north west corner of Dougall Parkway and Sixth Concession Road.
- Approximately 1,640 m^2 (affecting three lots) at the south west corner of Dougall Parkway and Sixth Concession Road. This property is presently owned by Penwest Developments Limited.

The City has initiated discussions with the owners of the affected properties.

7.4 Preliminary Cost Estimate

A preliminary cost estimate was prepared for the preferred design based on typical unit prices recently tendered for similar work. The estimate was prepared taking into consideration the following factors:

- The cost estimate is in 1999 dollars.

- The cost of permits is **not** included.
- The estimate includes an allowance for engineering.
- The estimate does **not** include the cost for utility relocations.
- The estimate includes a 10 percent contingency allowance.

The total estimated cost of this project is $3,555,000, the breakdown of which is listed below:

• Construction		$2,500,000
• Engineering		$400,000
• Utilities		$50,000
• Contingency		$250,000
• Interim Financing		$100,000
• Land and Survey		$150,000
	SUBTOTAL	**$3,450,000**
	NET G.S.T. (3/7 of 7%)	**$105,000**
	TOTAL	**$3,555,000**

A cost estimate was also prepared for the construction of a self supported bicycle bridge totalling $360,000. This estimate does not include any additional land acquisition costs.

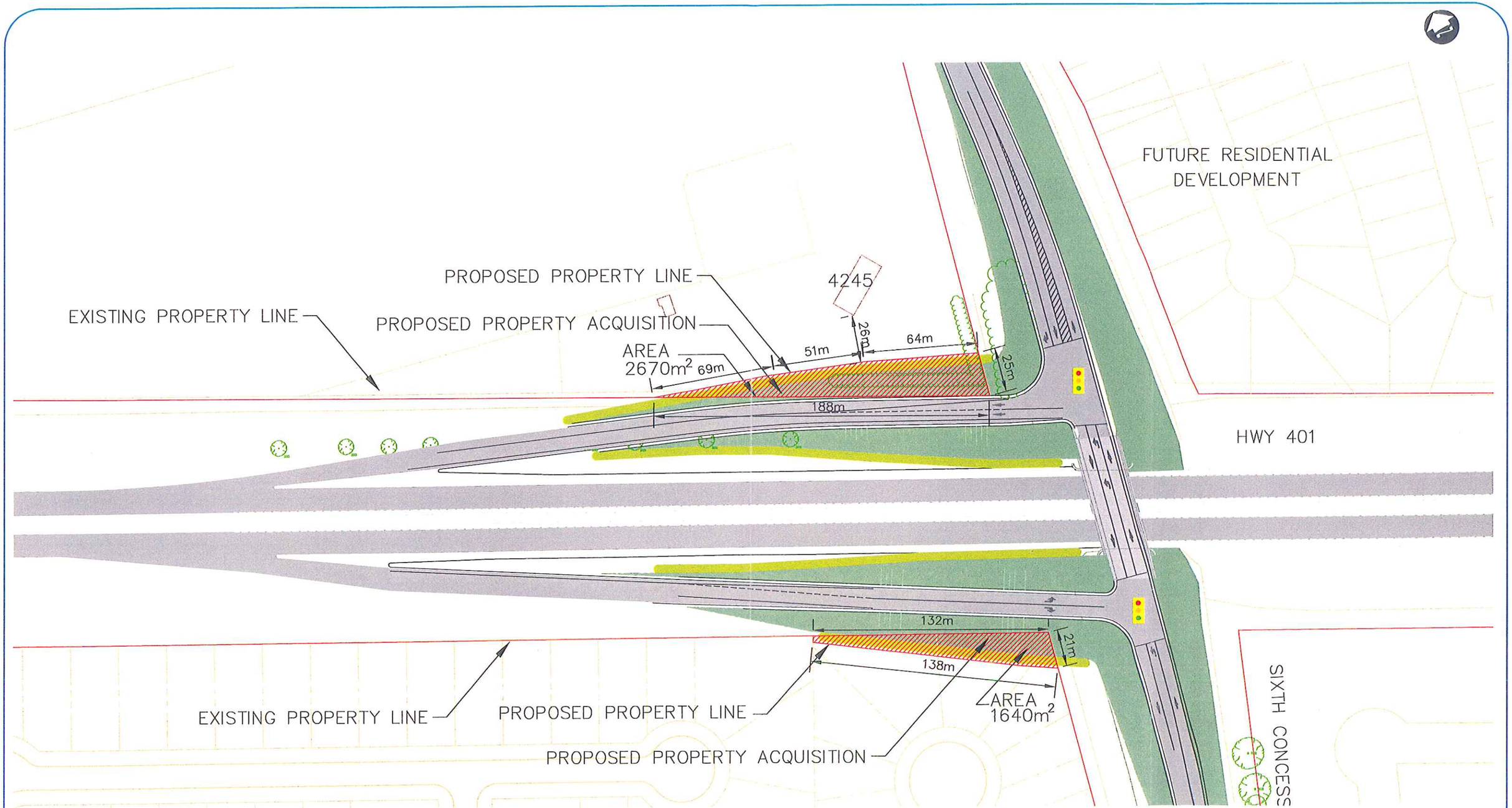
7.5 Construction Timing

The timing for construction of the proposed interchange at Dougall Parkway and Sixth Concession Road will be based primarily on the availability of City capital works funds. Other factors which may influence the schedule of the works include:

- The timing required for utility relocation that must be completed prior to, or in conjunction with the interchange construction.
- The timing of property acquisitions required to accommodate the preferred design.
- Any approvals required to complete the construction.

With respect to construction staging, there will likely be two phases. The first phase would include construction of the earthen berms for the exit and entrance ramps. The berms would be constructed with an acceptable fill material placed in layers and mechanically compacted. The second phase,

which would proceed to construction at least one year after construction of the earthen berms, would include construction of the roadway for the exit and entrance ramps as well as reconstruction of Sixth Concession Road.



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Legend:
Proposed Property Acquisition

FIGURE 10.0
Proposed Property Acquisition
Dougall Parkway at 6th Concession Road
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8.0 COMMITMENTS TO FURTHER WORK AND MONITORING

As part of the detailed design for the Dougall Parkway / Sixth Concession Road Interchange Improvements, the following work will be completed:

- Develop detailed design drawings reflecting the "Preferred Design" including mitigating measures identified during the planning stages.

- Negotiate the acquisition of property required to accommodate the "Preferred Design", including utility easements requirements.

- Meet with any property owners who wish to be consulted during the detailed design phase of this project, including issuing notices of the proposed schedule for any work required to be undertaken.

A field inspection and monitoring program will be established both during and following the construction of the interchange for the following purposes:

- To ensure compliance with the various elements of the "Preferred Design", including mitigative measures as developed through the planning process for this project.

- To ensure compliance with the Contract Specifications, Provincial Standards and standard construction practices during the construction of the Interchange Improvements.

- Assess the overall performance and effectiveness of the mitigative measures which have been specified.