

## **ZCOMMITTEE OF THE WHOLE- NOVEMBER 17, 2008**

### **PROPOSED HIGHWAY 407 INTERCHANGE IMPROVEMENTS IN VAUGHAN**

#### **Recommendation**

The Commissioner of Engineering and Public Works recommends:

1. That Council endorse the proposed partial east-oriented interchange on Highway 407 at Martin Grove Road and authorize staff to continue to work with the Region of York, 407 ETR and the Ministry of Transportation to facilitate the implementation of this interchange;
2. That Council provide direction to staff on whether to support the protection of the necessary lands for a possible future partial interchange on Highway 407 at Centre Street or to maintain Council's resolve of August 23, 2003 that requested the Ministry of Transportation and 407-ETR remove any plans for construction of an interchange at Highway 407 and Centre Street from its program for future development of Highway 407; and
3. That copy of this report be forwarded to the Region of York.

#### **Economic Impact**

There are no economic impacts associated with this report.

#### **Communications Plan**

A copy of this report will be forwarded to the Region of York.

#### **Purpose**

The purpose of this report is to provide Council with an overview of the Traffic and Financial Model Study that the Region of York undertook to investigate the feasibility for potential new interchanges along Highway 407 within York Region, in particular at Martin Grove Road, Kipling Avenue, Islington Avenue and Centre Street.

#### **Background - Analysis and Options**

In 1999, Highway 407 was sold to a private sector as part of the Province of Ontario's privatization efforts with obligations to construct and complete seven interchanges along the existing highway. The original agreement identified specifically the ramps to be constructed, but subsequently agreements between the Province and the 407 ETR deferred the construction of the Centre Street and Kipling Avenue interchanges in the City of Vaughan for a period of 15 years to 2020. During this timeframe, an independent study of the technical and financial feasibility of each interchange is to be initiated by the 407 ETR to determine whether construction of either or both are warranted or further deferral of the interchanges is required.

On June 22, 2006, Regional Council authorized York Region staff to engage a consultant to assist in conducting a traffic and financial model study of possible interchange improvements opportunities along Highway 407 in York Region. The study was initiated in response to a request from the Town of Markham to undertake a study for possible future interchanges along Highway 407 at Ninth Line and Donald Cousens Parkway.

The Regional study examined potential new interchanges or interchange improvements along Highway 407 at Donald Cousens Parkway and Ninth Line in the Town of Markham, Leslie Street

in the Town of Richmond Hill and at Centre Street, Islington Avenue, Kipling Avenue and Martin Grove Road in the City of Vaughan. Vaughan staff participated as technical advisor on the study Transportation Advisory Committee (TAC) together with representatives from the Towns of Markham and Richmond Hill, York Region, 407 ETR and the Ministry of Transportation (MTO).

The Highway 407 traffic and financial analyses of the feasible options were conducted for the 2011, 2021 and 2031 horizon years and were used to develop a business case for each of the recommended improvements at the above locations. 407 ETR is prepared to consider business cases which demonstrate future revenue from traffic utilizing new interchanges or interchange improvements that show a positive five-year net present value (NPV) benefit to 407 ETR.

### **Council Directions for Centre Street and Martin Grove Road Proposed Interchanges**

Vaughan staff advised the Technical Advisory Committee early in the study process of Council's previous positions regarding the proposed 407 ETR interchanges at Martin Grove Road and Centre Street, in particular:

Council, at its meeting on August 23, 2003, adopted the following resolution:

*"Whereas the proposed interchange at Highway 407, Centre Street and Dufferin Street has the potential to disrupt the adjacent residential area with traffic noise, interfere with the community feeling of the area and adversely affect the aesthetics of the area; and*

*Whereas the area is well served by the existing interchange at Dufferin Street; and*

*Whereas the community does not perceive a benefit from the construction of the interchange of Centre Street and in fact many area residents are strongly opposed to an interchange at this locations;*

*Now therefore, the Council of the City of Vaughan resolves that the Ministry of Transportation/ETR be requested to remove any plans for construction of an interchange at Highway 407 and Centre/Dufferin Streets from its program for future development of Highway 407."*

Council, at its meeting on June 15, 2005, adopted the following resolution:

*"That the Ministry of Transportation be requested to immediately commence the studies necessary for the construction of a partial (east-oriented) interchange at Highway 407/ETR and Martin Grove Road."*

The Region of York supported the City of Vaughan's request to the Ministry regarding a partial interchange at Highway 407 and Martin Grove Road at its Regional Council Meeting of June 23, 2005.

### **Potential New Interchanges along Highway 407 in the City of Vaughan**

#### **Western Interchange Options (Martin Grove Road, Kipling Avenue, and Islington Avenue)**

Early in the study process, it was decided to group the three interchanges in the west, as only one would be feasible due to the proximity of the arterial road crossing of Highway 407 between the existing full interchange at Pine Valley Road and Highway 27:

- Partial interchange at Martin Grove Road, to and from the east;
- Full/partial interchange at Kipling Avenue; or,
- Partial interchange at Islington Avenue, to and from the west.

After further analysis, it was found that the Islington Avenue partial interchange option to and from the west is not practical due to significant issues associated with the crossing of the Humber River valley and the CPR line. Accordingly, the Islington Avenue partial interchange option was excluded from further consideration.

### Martin Grove Road

Given the existing ramp configuration for the Highway 27/407 interchange and the existing land use in the area, it is not geometrically and operationally feasible to construct full interchange at Martin Grove Road. However, a partial interchange to and from the east is feasible and could generally be constructed within the existing Highway 407 right-of-way. This interchange configuration is illustrated in Attachment No. 1.

Construction of a new partial interchange at Martin Grove Road would result in traffic increases on this facility and decreases on the Highway 27 to the west. Traffic travelling through the intersection with Highway 407 would be reduced. Resulting increase in volume from traffic using the new interchange would be larger and would result in a net increase in traffic volumes on Martin Grove Road. The increase in traffic would be approximately 65% in 2011, resulting in reduced level of service and increase in delay on this facility, although not approaching capacity.

Revenue net increase forecast was prepared for this option and was found that existing demands for this partial interchange at Martin Grove Road result in a positive five-year net present value immediately, regardless of the property acquisition costs.

### Kipling Avenue

The latest identified MTO interchange configuration that was deferred from construction obligation with the 407 ETR was assumed in the analysis as per direction from the Technical Advisory Committee. This interchange improvement consists of a Parclo A-3 configuration that provides a direct connection to Martin Grove Road to the north of Highway 407 avoiding some significant environmental impacts, but also provides no access to the west (Attachment No. 2).

For the analysis purposes it was assumed that the Kipling Avenue extension north of Steeles Avenue West to Martin Grove would be completed by 2011, although no planned/approved completion date is anticipated at this time.

The introduction of a new interchange at Kipling Avenue would lead to increase in traffic on this facility. Traffic travelling through the intersection with Highway 407 would be reduced. Traffic volumes on Martin Grove Road, Highway 27 and Pine Valley Drive would decrease. Resulting increase in volume from traffic using the new interchange would be larger and would result in a net increase in traffic volumes on Kipling Avenue.

The traffic increase on Kipling Avenue would be approximately 160% in the southbound direction south of Highway 407 in 2011, resulting in reduced level of service and increase in delay on this facility, though not approaching capacity even with this significant increase.

Due to the high capital cost of \$50 million, \$10 million in the property acquisition costs and annual operating and maintenance costs, the implementation of Kipling Avenue ramps would not reach positive investment status within the timeframe of this study. Positive investment status would be reached around 2031 if property costs are not considered.

## Centre Street

Three alternative interchange improvement design concepts were developed and identified for the Centre Street Ramp Option analysis as illustrated in Attachment No. 3 to No. 5 (two partial interchanges to and from the west and the full interchange).

### *Option No.1 (partial interchange)*

Option No. 1 includes the provision of a loop ramp in the northeast quadrant, from Centre Street northbound to 407 ETR westbound, and a directional to a signalized "T" intersection at Centre Street ramp in the southwest quadrant from 407 ETR eastbound (Attachment No. 3).

### *Option No.2 (partial interchange)*

Option No. 2 includes the provision of a loop ramp in the northeast quadrant, from Centre Street northbound to 407 ETR westbound, and a loop ramp in the southeast quadrant from 407 ETR eastbound to a signalized "T" intersection at Centre Street (Attachment No. 4).

### *Option No. 3 (full interchange)*

Option No. 3 includes the provision of a loop ramp in the northeast quadrant, from Centre Street northbound to 407 ETR westbound, a directional ramp in the southwest quadrant from 407 ETR eastbound that would split to directly connect to Centre Street and Dufferin Street, and a connecting road on the west side of Centre Street over Highway 407 between 407 ETR westbound and Dufferin Street northbound. This option was deferred from the construction obligation by the 407 ETR to 2020 (Attachment No. 5).

The feasibility analyses found that all three design options are technically feasible and were carried through more detailed development. Based on the analysis, demand for each option would be approximately the same as would the traffic impacts for the most part.

Options No. 1 and No. 2 would have fewer impacts on the existing residential development in the southwest corner of Dufferin Street and Centre Street. No direct connection with Dufferin Street would be provided as illustrated in the provided Attachments. A connecting road on the west side of Centre Street over Highway 407 between 407 ETR westbound and Dufferin Street northbound would be eliminated. There could be potential for noise barrier installation with Option No. 1 due to the directional ramp in the southwest quadrant from eastbound 407 ETR, however, these impacts would be significantly less than the Ramp Option No. 3.

Construction of a new full interchange at Centre Street would result in traffic increases on this facility and decreases on Dufferin Street (north of Centre Street), Highway 7, Steeles Avenue West and Keele Street. Traffic travelling through the intersection with Highway 407 would be reduced. The resulting increase in volume from traffic using the new full interchange would be larger and would result in a net increase in traffic volumes on Centre Street.

For Options No. 1 and No. 2, the projected traffic increase on Centre Street would be approximately 15% in the westbound direction between the interchange and Dufferin Street in 2011, and would result in unacceptable levels of congestion. For Option No.3, this increase would be less as traffic to/from Dufferin Street south of Centre Street would be accommodated by ramps parallel to Centre Street.

Due to the significant difference in construction cost, each option is analyzed separately from a financial performance perspective. Revenue net increase forecasts were prepared and was found that Option No. 1 and No. 2 would reach a neutral investment status sometime around 2021. The

much larger cost of Option No. 3 would preclude this option from reaching a positive investment status within the timeframe of the study regardless of property acquisition cost.

### **Thornhill-Centre Street Study and Relation to the Proposed Centre Street Interchanges**

The vision for the Thornhill Centre Street Study Area is being implemented through the Official Plan Amendments #671 (Thornhill Town Centre) and #672 (Centre Street Spine).

As the character of the Centre Street corridor varies in terms of land use, building height, streetscape, connectivity and adjacent uses, for the purposes of the study the corridor was divided into three separate sections: the Eastern Gateway/Town Centre, the Central Spine and the Western Gateway.

The Western Gateway includes a number of large vacant or undeveloped parcels of land surrounding the Dufferin Street and Centre Street intersection. It is a focus and entry point to the Thornhill community from the west and north. The Gateway is largely influenced by the Provincial government in terms of the disposition of lands in the south half of the Gateway.

The full interchange option, Option No. 3, would have significant impacts on the future Gateway developments opportunities. This option could preclude the implementation of OPA #672 in the south half of the Western Gateway.

The partial interchange options do not prevent development opportunities in the Western Gateway area as partial ramps would be located on lands west of Hydro Corridor and are outside of the Thornhill Centre Street Study Area.

### **Relationship to Vaughan Vision 2020**

This report is consistent with the priorities previously set by Council Vaughan Vision 2020 strategic initiatives

- To enhance and ensure community safety, health and wellness;
- To lead and promote environmental sustainability;
- To plan and manage growth and economic vitality.

This report is therefore consistent with the priorities previously set by Council.

### **Regional Implications**

Region of York is proponent of the study and Regional and City staff have jointly reviewed the analysis and recommendations of the study. Region of York staff have been consulted on this report and are supportive of its recommendations.

Regional Council, at its meeting on October 23, 2008, adopted the recommendations of Report No. 9 Item 1 of the Planning and Economic Development Committee as follows:

1. *The communication from Sandra Yeung Racco, Councillor, City of Vaughan, be received;*
2. *Recommendations 1, 3, 4 and 5 contained in the following report dated September 11, 2008, from the Commissioner of Planning and Development Services and Commissioner of Transportation Services, be adopted as follows:*
  1. *Regional Council endorse the June 2008 Final Report for the Traffic and Financial Model Study for Highway 407 Interchange Improvements.*

2. *Regional Council endorse the recommendations to the City of Vaughan to protect lands for a possible future partial interchange at Centre Street.*
3. *Regional Council authorize staff to work with City of Vaughan, 407 ETR, and the Ontario Ministry of Transportation to pursue the implementation of a Martin Grove Road interchange.*
4. *Regional staff report back to Council on the status of any discussion with 407 ETR and the progress of the interchange implementation projects and future needs.*
5. *The Regional Clerk forward a copy of this report to the Clerk of the City of Vaughan, and Towns of Markham and Richmond Hill, 407 ETR, and the Ministry of Transportation.*

3. *Recommendation 2 be referred to staff for further consultation with the City of Vaughan.*

### **Conclusion**

The Region of York completed the Traffic and Financial Model study for seven potential new interchanges or interchange improvements along Highway 407 in York Region. Four of the potential interchanges are located in the City of Vaughan, and include: Martin Grove Road, Kipling Avenue, Islington Avenue and Centre Street.

The report concluded that the existing demand for Martin Grove Road partial interchange to and from the east results in a positive five-year net present value if constructed in 2008. This option would provide immediate benefit to the residents and businesses in the area and would reduce the need for extended travel on Regional Road 7 to access 407 ETR. It is recommended that Council endorse this option and request the Region of York to present a business case and enter into discussion with MTO and 407 ETR to build a new partial interchange at Martin Grove Road. Should Council endorse the Martin Grove Road interchange, the future feasibility of the Kipling Avenue Interchange would be precluded.

Based on the Traffic and Financial Model Study findings it was found that the Centre Street partial interchange Option No. 1 and No. 2 would reach a neutral investment status around 2021. As such, both options would be subject to the technical and feasibility study by 407 ETR prior to year 2020 as per agreement between the Province and the 407 ETR. Based on the partial interchange design, the ramps would be located outside the Thornhill Centre Street Study area. Given that this is a new partial interchange proposal, staff is seeking direction from Council on whether to protect the necessary lands for a possible future partial interchange on Highway 407 at Centre Street or to maintain Council's resolve of August 23, 2003 that request the Ministry of Transportation and 407-ETR to remove any plans for construction of an interchange at Highway 407 and Centre Street from its program for future development of Highway.

### **Attachments**

1. Martin Grove Road Interchange Option
2. Kipling Avenue Interchange Option
3. Centre Street Alternative Concept No.1
4. Centre Street Alternative Concept No.2
5. Centre Street Alternative Concept No.3

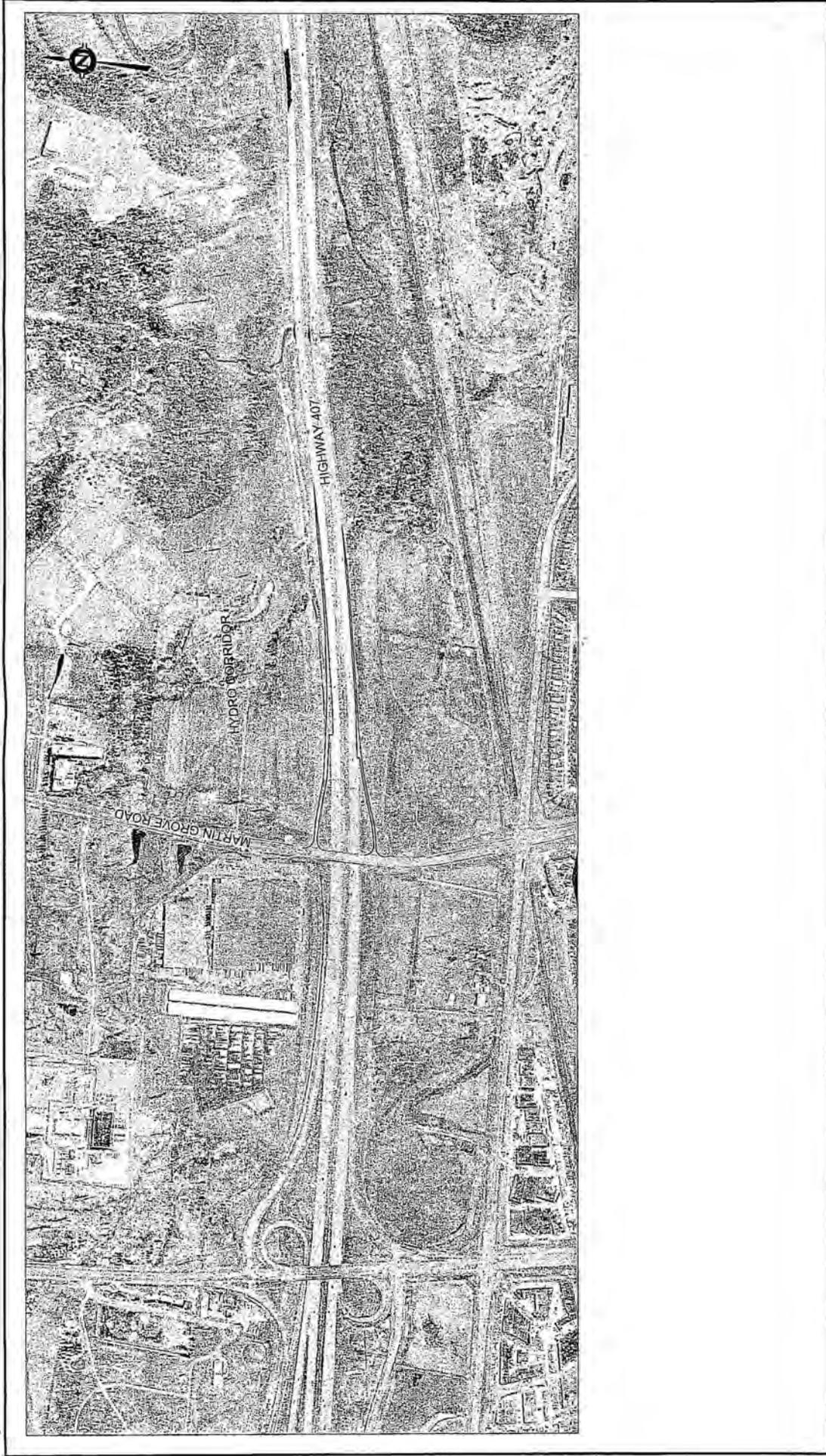
**Report prepared by:**

Selma Hubjer, Transportation Engineer, Ext. 8674

Respectfully submitted,

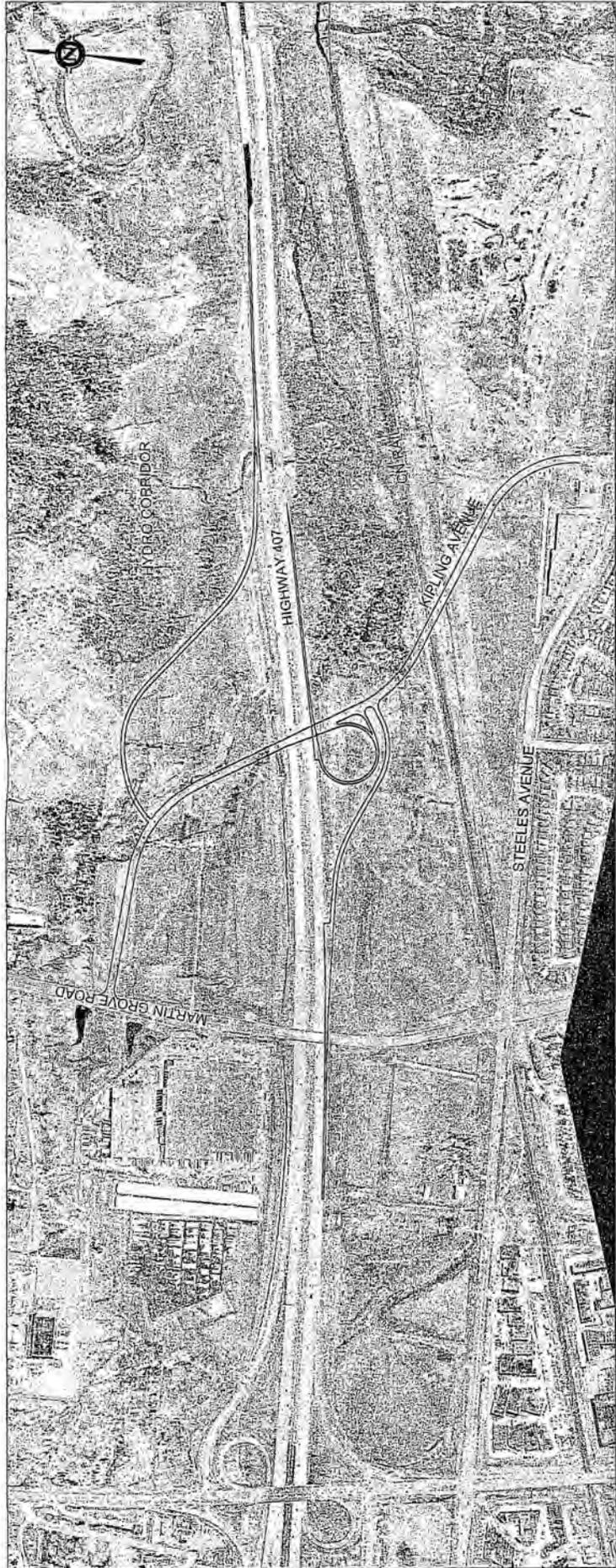
Bill Robinson, P. Eng.  
Commissioner of Engineering  
and Public Works

Andrew Pearce, C.E.T.  
Director of Development/  
Transportation Engineering



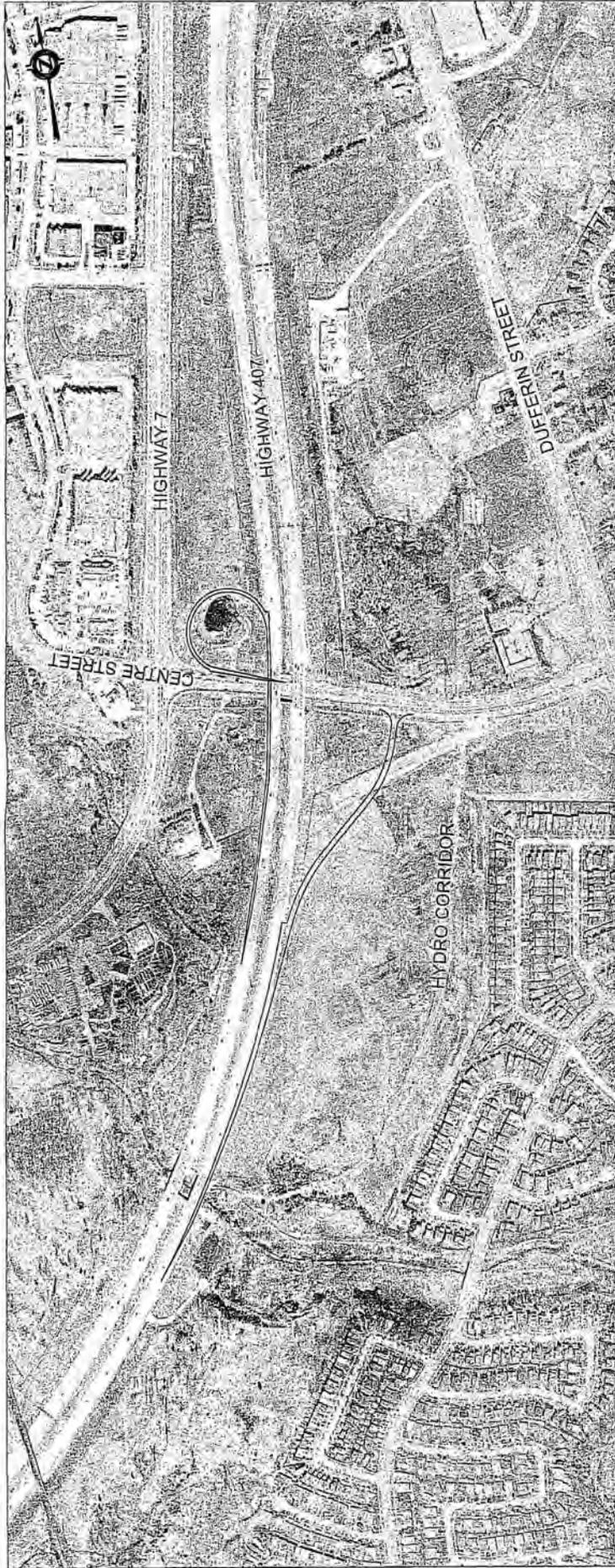
MARTIN GROVE ROAD AT HIGHWAY 407

ATTACHMENT No. 1



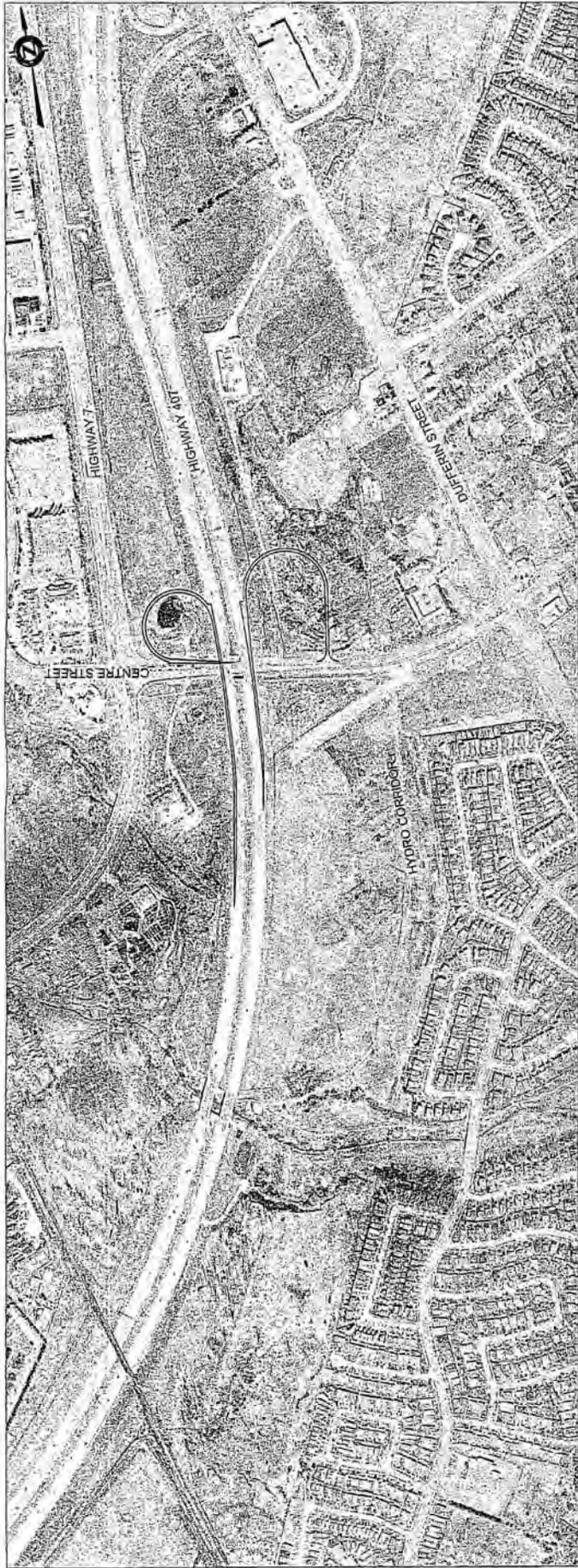
KIPLING AVENUE AT HIGHWAY 407

ATTACHMENT No. 2



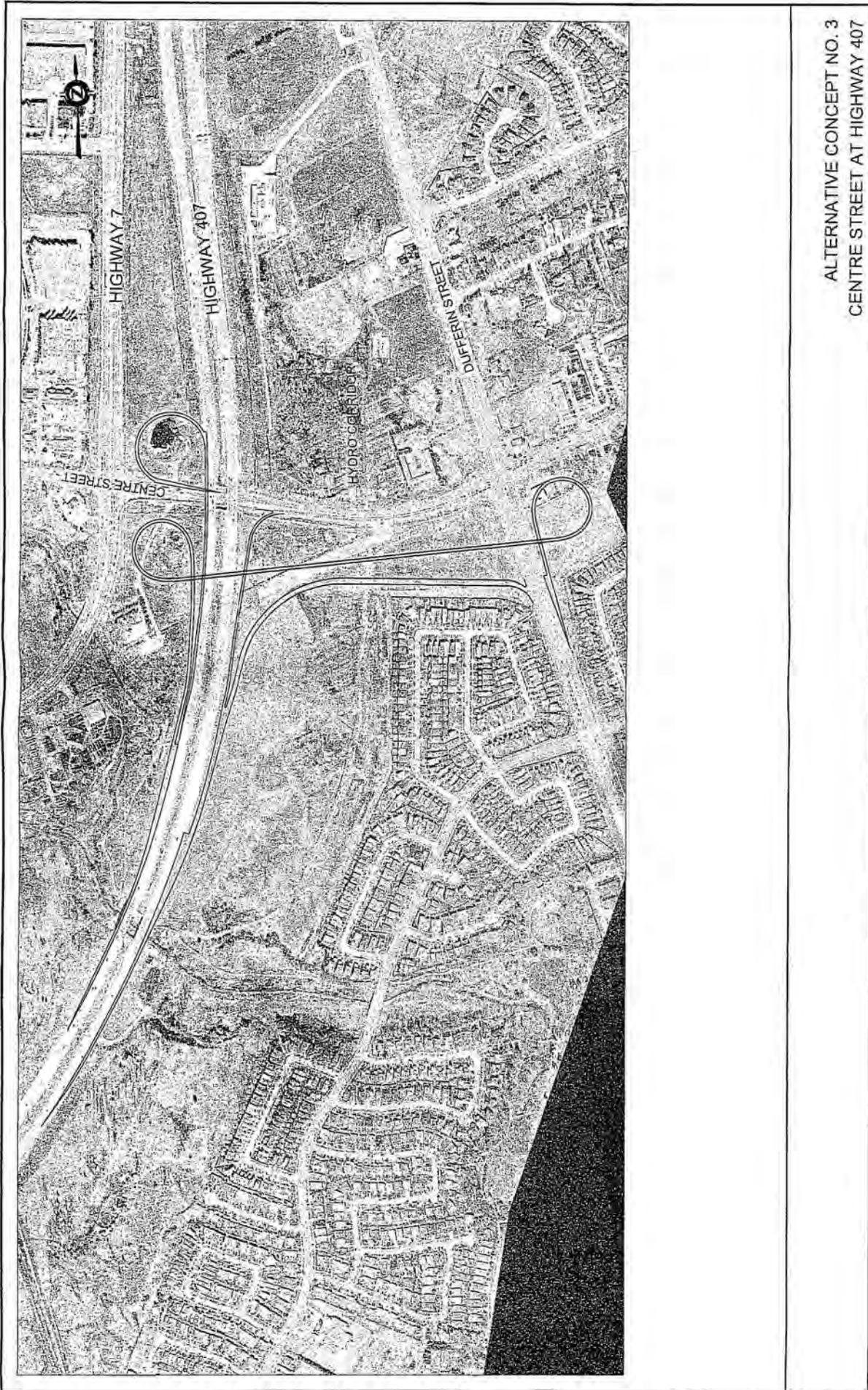
ALTERNATIVE CONCEPT NO. 1  
CENTRE STREET AT HIGHWAY 407

ATTACHMENT No. 3



ALTERNATIVE CONCEPT NO. 2  
CENTRE STREET AT HIGHWAY 407

ATTACHMENT No. 4



ALTERNATIVE CONCEPT NO. 3  
CENTRE STREET AT HIGHWAY 407

ATTACHMENT No. 5