CITY OF VAUGHAN
FINANCE, ADMINISTRATION AND AUDIT COMMITTEE
ADDENDUM AGENDA

(NOTE: ADDENDUMS WILL REQUIRE A TWO-THIRDS VOTE OF THE MEMBERS PRESENT TO BE ADDED TO THE AGENDA)

Wednesday, June 5, 2019
3:00 p.m.
Committee Rooms 242/243
2nd Floor, Vaughan City Hall
2141 Major Mackenzie Drive
Vaughan, Ontario

Pages

4. DETERMINATION OF ITEMS REQUIRING SEPARATE DISCUSSION INCLUDING MEMBERS RESOLUTION(S)

Addendum Listing

9. *KIRBY ROAD EXTENSION BETWEEN BATHURST STREET AND DUFFERIN STREET CLASS ENVIRONMENTAL ASSESSMENT STUDY* — *2*

Report of the Deputy City Manager, Public Works and the Deputy City Manager, Planning and Growth Management with respect to the above.

Finance, Administration and Audit Committee Report

DATE: Wednesday, June 05, 2019 **WARD:** 1

TITLE: KIRBY ROAD EXTENSION BETWEEN BATHURST STREET AND DUFFERIN STREET CLASS ENVIRONMENTAL ASSESSMENT STUDY

FROM:

Zoran Postic, Deputy City Manager, Public Works
Jason Schmidt-Shoukri, Deputy City Manager, Planning and Growth Management

ACTION: DECISION

Purpose

Following Council authority provided in December 2015, Rizmi Holdings Limited (RHL). has now substantially completed the Environmental Assessment Study for the Kirby Road Extension between Bathurst Street and Dufferin Street. This report informs Council of the activities carried out to date and recommends that the City jointly proceeds as co-proponents with RHL to issue the Notice of Study Completion and file the Environmental Study Report, subject to RHL finalizing the Environmental Study Report, on public record in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment October 2000, as amended in 2007, 2011 & 2015 (MCEA).

This report is brought forward as an addendum to ensure timely resources and services, to seamlessly advance the next phases of the project within Council's broader timeline for the commencement of construction this term of Council. Staff are seeking Council's approval for a mid-year Capital Budget amendment to create a new capital project to provide the necessary funding needed to initiate detailed design and preliminary engineering.

Report Highlights

- The Kirby Road Extension between Bathurst Street and Dufferin Street is a strategic growth-related transportation infrastructure project, forming part of broader Kirby Road improvements in the City's planned street network, as identified in the City-wide Transportation Master Plan 2012 and in the City's 2018 Development Charge Background Study
- RHL, as a private sector proponent, has substantially completed the Class Environmental Assessment Study (EAS) for the Kirby Road Extension between Bathurst Street and Dufferin Street and submitted a Final Draft Environmental Study Report May 2019 for key stakeholder review
- City staff have monitored the progress of the EAS, as per the conditions outlined in Council's direction of December 2015, and are satisfied that the EAS is substantially complete and can proceed to Notice of Study Completion - subject to RHL finalizing the Environmental Study Report
- Staff recommend the City proceed jointly as co-proponents with RHL to issue Notice of Study Completion and file the Environmental Study Report for the mandatory public review period in accordance with the Municipal Engineers Association MCEA, subject to RHL finalizing the EAS to the satisfaction of the City
- In order to advance the project within Council's broader timeline for construction commencement by this term of Council, staff are seeking Council's approval for a mid-year Capital Budget amendment to create a new capital project to initiate detailed design and preliminary engineering

Recommendations

1. That Council direct staff to continue to proceed jointly as co-proponents with Rizmi Holdings Limited to issue the Notice of Study Completion and file the Kirby Road Extension between Bathurst Street to Dufferin Street Environmental Study Report, once finalized to the satisfaction of the City and in accordance with the agreement between the City and Rizmi Holdings Limited, as amended;
2. That a new 2019 Capital project be created in the amount of $3,100,000, funded from City-wide Engineering Development Charges Reserve Fund, to initiate detailed design and preliminary engineering, including a three-year Project Manager position within the Infrastructure Delivery Department to commence the design phase of the project in 2019;
3. That the inclusion of this matter on a Public Committee or Council agenda with respect to amending the Capital Budget identified as "Kirby Road Extension between Bathurst Street and Dufferin Street" is deemed sufficient notice pursuant to Section 2(1)(c) of By-Law 394-020 as amended;

4. That this report be forwarded to the Citizen Liaison Committee including representatives from the Mackenzie Ridge Ratepayers Association, Maplewood Ravines Ratepayers Association and resident members at large from the City of Vaughan and Richmond Hill and the Vaughan Chamber of Commerce; and
5. That this report be forwarded to York Region, York Region Transit, City of Richmond Hill, Toronto and Region Conservation Authority, Ministry of Environment Conservation and Parks, Ministry of Natural Resources and Forestry and the Ministry of Municipal Affairs and Housing.

Background

The City of Vaughan Official Plan 2010 provides broader transportation policy context for completing missing links including Kirby Road

The Environmental Assessment Study has been advanced consistent with and in meeting the following transportation policies of the Official Plan, notably:

- policy 4.2.1.6 for implementing planned network improvements completing grid connections including Kirby Road, and
- policy 4.2.7 directing undertaking of environmental assessment study for transportation infrastructure related to crossings of watercourses and entering into the Oak Ridges Moraine Conservation Plan Area and Greenbelt Area.

Successive Transportation Master Plans have reaffirmed the need for completing the Kirby Road missing link between Bathurst Street and Dufferin Street as part of broader Kirby Road improvements in north Vaughan

The City's Transportation Master Plan (A New Path 2012) and more recently completed North Vaughan and New Communities Transportation Master Plan (February 2019), identify the Kirby Road missing link between Bathurst Street and Dufferin Street as part of a strategic network connection and improvement in the City and Regional transportation networks respectively.

The York Region Transportation Master Plan (YRTMP) 2016 identifies Kirby Road as a strategic goods movement corridor forming part of the arterial concession grid and will serve a regional function as growth and development occurs. The YRTMP 2016, broadly identifies Kirby Road as a strategic goods movement corridor, and is part of an emerging east-west link comprised of Gamble Road, 19th Avenue and Donald Cousens Parkway.

A Notice of Study Completion for the North Vaughan and New Communities Transportation Master Plan was issued on February 28, 2019

Building on the City-wide Transportation Plan Master Plan, the North Vaughan and New Communities Transportation Master Plan (NVNCTMP) recommendations and conclusions were approved in principle by Council in June 2018. A Notice of Study Completion was issued on February 28, 2019. The NVNCTMP identified the need for capital improvements to the City's transportation system in North Vaughan including Kirby Road improvements and recommended the need for the Kirby Road "missing link"

segment, as aligned with the timing of Kirby Road improvements from Dufferin Street to Jane Street including the crossing of the Barrie GO Rail Line and jog elimination at the intersection of Kirby Road and Jane Street.

The NVNCTMP Phases 1 and 2 of the Municipal Class EA confirmed the City's TMP A New Path recommendation to complete Phases 3 and 4 for broader Kirby Road Widening and New Construction from Bathurst Street to Weston Road. The NVNCTMP more specifically corroborated the need and justification for widening of Kirby Road from 2 to 4 lanes and completion of the "missing link" between Bathurst Street and Dufferin Street (as initially recommended in the City Transportation Master Plan 2012).

The NVNCTMP recommends completing Phases 3 and 4 of the Environmental Assessments studies for Kirby Road improvements between Dufferin Street to Weston Road in corridor segments pro-actively, positioning the transportation network in alignment with Metrolinx's 10 Regional Express Rail program including the future Kirby GO Station and supporting growth in the new communities and employment areas in North Vaughan.

Rizmi Holdings Limited undertook the Class Environmental Assessment Study the Kirby Road Extension between Bathurst Street and Dufferin Street following Council authority provided in December 2015

In December 2015, Council authorized RHL to conduct the Environmental Assessment Study for the Kirby Road Extension from Bathurst Street to Dufferin Street. An agreement formalizing Council's decision was executed in November 11, 2016 and thereafter amended to provide for extensions to the EAS deadline. The agreement further provided that the completed Class EA and related project file report may only be filed for the mandatory public review with the City as co-proponent once the City is satisfied that the key agencies and stakeholders have accepted the recommendations and conclusions of the Class EA study.

RHL retained the professional services of Schaeffers Consultant Engineers (Schaeffers) to undertake the EAS.

Previous Reports/Authority

The following chronicles the timeline and Council's decision history specific to advancing the Environmental Assessment Study for the Kirby Road missing link between Bathurst Street and Dufferin Street:

- Council, at its meeting of October 18, 2011, in approving the Transportation Master Plan A New Path 2012 recommended:

  "That the Kirby Road Environmental Assessment be brought forward as soon as necessary to permit the Kirby Road link between Bathurst Street and Dufferin Street being completed by 2021;"

- Council, at its meeting of April 21, 2015, directed staff:

"…the consultant and/or staff should be directed to work with the landowner along the Kirby unopened road allowance between Dufferin Street and Bathurst Street with a goal to having the missing link constructed by Fall of 2018 if possible."

- Per Council's authorization December 2015, the City subsequently entered into an agreement with RHL formalizing the arrangements under which RHL was to undertake and complete the Municipal Class Environmental Assessment Study Kirby Road Extension between Bathurst Street to Dufferin Street. The agreement further provided that the completed Class EA and related project file report may only be filed for the mandatory public review with the City as co-proponent once the City is satisfied that the key agencies and stakeholders have accepted the recommendations and conclusions of the Class EA study.

http://meetingarchives.vaughan.ca/extracts_2011/pdf/46ws1004ex-11.pdf
https://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW0414_15_17.pdf
https://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW1201_15_10.pdf
https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=4362
https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=2626

Analysis and Options

Schaeffers Consulting Engineers, on behalf of Rizmi Holdings Limited, has substantially completed the Environmental Assessment Study and prepared the Final Draft Environmental Study Report for the Kirby Road Extension between Bathurst Street and Dufferin Street May 2019

Formally commenced, by Notice of Study Commencement on May 11, 2017 Schaeffers, on behalf of RHL, have substantially completed the Environmental Assessment Study and prepared a Final Draft Environmental Study Report (ESR) May 2019 and supporting appendices. The ESR and supporting technical appendices document the EAS planning and design process and recommends a Preliminary Preferred Design Concept for the construction of the Kirby Road Extension between Bathurst Street and Dufferin Street. Schaeffers has made available the Final Draft ESR May 2019 to the key stakeholder groups, Citizen Liaison Committee and Technical Advisory Group, for review and feedback.

A detailed overview of the EAS process is found within Attachment 1, Technical Report – Summary of Class Environmental Assessment Study the Kirby Road Extension between Bathurst Street and Dufferin Street.

City staff are satisfied, in principle, and recommend proceeding to issue Notice of Study Completion jointly with Rizmi Holdings Limited subject to conditions
City staff, having monitored the EAS in accordance with the basic conditions in the December 15, 2015 Council report to date, are satisfied, in principle, and recommend

proceeding to issue Notice of Study Completion and file the Environmental Study Report jointly as co-proponents with RHL subject to the following conditions:

1. RHL finalizing the ESR to the satisfaction of the City,
2. RHL continues to assume sole responsibility for the project file through the public review. All services and associated costs are to be borne by RHL, and
3. RHL is solely responsible for responding and resolving any Part II orders and addressing any conditions imposed by MECP including the need for an addendum in association with approval per the MCEA (*Environmental Assessment Act*). All services and associated costs are to be borne by RHL.

The Final Draft Environmental Study Report May 2019 documents a planning and design process following the MCEA and recommends a Preliminary Preferred Design Concept for the extension of Kirby Road from Bathurst Street to Dufferin Street, as shown in Attachment 1a.

Notice of Study Completion and filing of the ESR for the public review period is anticipated in Q3-2019. Recognizing that the public review period may potentially occur during the summer months, staff are recommending the public review period be extended to 45 days, exceeding the mandatory minimum 30-day public review period as per the MCEA.

Financial Impact

The Class Environmental Assessment Study for the Kirby Road Extension from Bathurst Street to Dufferin Street is being funded from approved Capital Project DT-7112-14 and with funding from City-wide Development Charges.

The Kirby Road Extension from Bathurst Street to Dufferin Street is a growth-related project and is included in the City's 2018 Development Charges Background Study. The preliminary cost of design and construction prepared for purposes of the City's Development Charges Background Study was estimated to be $38.2M.

The preliminary cost estimate prepared by Schaeffers as part of the EAS has estimated the project cost to be $43.2M. Preliminary cost estimates are subject to revision and refinement through future processes for advancing project implementation and property acquisition, respectively.

There are currently no funds approved within the 2019 Capital Budget for the Kirby Road Extension from Bathurst Street to Dufferin Street. The ability to deliver the project would be subject to the City's annual Capital Budget review and approval process.

To advance the next phase of the project, staff are seeking Council's approval to create a new capital budget in the order of $3,100,000, funded from City-wide Engineering Development Charges Reserve Fund, to initiate detailed design and preliminary

engineering, including a three-year Project Manager position within the Infrastructure Delivery Department for staff to commence the design phase of the project in 2019.

Staff are in receipt of documentation from RHL with respect to the cost in undertaking the EAS to date. Staff will review the information and report back to Council seeking direction on amendments to the agreement, if required.

Broader Regional Impacts/Considerations

York Region and York Region Transit staff have participated through all phases of the EAS as members of the formal Technical Advisory Group and specifically as it relates to intersections at Dufferin Street and Bathurst Street at Gamble Road at the City's boundary with Richmond Hill. It is recognized that intersections are subject to the findings of any York Region future studies including any Environmental Assessments, as applicable, for improvements to Dufferin Street or Bathurst Street as applicable.

The City's TMP 2012 and YRTMP 2016 identify Kirby Road is to be considered for transfer of jurisdiction from the City to the Region

The City continues to request the Region's consideration for assumption of Kirby Road as part of the Regional road network under the Regional Road Assumption Policy which sets out the criteria for road jurisdiction transfers. The EAS identified all key criteria to be considered for jurisdiction transfer as satisfied as follows:

- The Region's longer-term plans as part of the goods movement network and broader regional arterial network with cross boundary/inter-regional-inter-municipal function comprised of east along Gamble Road, 19th Avenue and Donald Cousens Parkway as identified in the YRTMP 2016 are supported
- It creates a logical connection in the Regional road network wherein a gap in the 2km concession grid exists
- It forms part of the existing or planned rapid transit route or connection to major transit hub considering Metrolinx's 10-year Regional Express Rail program and the future Kirby GO Station

Conclusion

Schaeffers, on behalf of RHL, has substantially completed the Environmental Assessment Study and prepared a Final Draft Environmental Study Report May 2019.

Upon RHL finalizing the EAS to the satisfaction of the City, staff will proceed jointly with RHL to issue the Notice of Study Completion and file the ESR for a mandatory public review period in accordance with the MCEA.

To seamlessly advance the next phase of the project, staff are seeking Council's approval of a new capital project in the order of $3,100,000 requested to fund resources and services to initiate detailed design and preliminary engineering, including a three-

year Project Manager position within the Infrastructure Delivery Department to commence the design phase of the project in 2019.

For more information, please contact:
Vince Musacchio, Director, Infrastructure Planning & Corporate Asset Management, x8311

Attachments

1. Attachment 1 - Summary of the Environmental Assessment Study process
    a. Recommended Preliminary Preferred Design Concept – Plan and Profile Drawing
    b. Recommended Preliminary Preferred Design Concept – Cross -Section

Prepared by

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In Consultation with

Andrew Pearce, Director, Development Engineering
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Wendy Law, City Solicitor
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Maggie Chen, Financial Analyst

Attachment 1 – Summary of the Environmental Assessment Study process

The Environmental Assessment Study followed the Municipal Engineers Association Municipal Class Environmental Assessment process as a Schedule C project

The MCEA classifies Schedule C projects as having potential for significant environmental effects and must proceed under the full planning and documentation procedures specified in the MCEA document. Recognizing the complexities of the project study area and immediate environs, the EAS was undertaken following the planning and design process for a Schedule C road project including the need for a new structured water crossing per the Municipal Engineers Association Municipal Class Environmental Assessment.

Schaeffers led and managed a cross and multi-disciplinary project team providing professional services supporting consultation and expertise in technical study of the natural, economic, social and transportation environments. More specifically the project team was comprised of the services and disciplines tabled below.

Name	**Expert Service/Discipline Area**
Schaeffers Consulting Engineers (Schaeffers & Associates Ltd.)	Project Management Class EA Public Consultation Transportation Engineering Stormwater Management Preliminary Cost Estimates Contamination Assessment
Poulos & Chung Ltd.	Transportation Planning
Savanta Inc	Natural Heritage
Lucas & Associates Ltd.	Socio-Economic
Archaeological Services Inc.	Archaeology Built Heritage and Cultural Landscape
Terraprobe Inc	Geotechnical Hydrogeology
GEO Morphix Ltd	Geomorphology
Hardy Stevenson & Associates	Public Facilitation
Novus Environmental Inc.	Air Quality Noise Climate Change
First Nations Engineering Services	First Nations Consultation

Led by Schaeffers, the project team undertook a Communication and Consultation Plan engaging stakeholders including Indigenous communities (First Nations and Métis) and the public

The EAS featured a Communication and Consultation Plan that engaged interested and affected study area and project stakeholders, Indigenous communities and public at key study milestones. The Communication and Consultation Plan included formal and informal methods of communication and consultation organized around study phases, engaging stakeholder groups including a Citizen Liaison Committee, and Technical Advisory Group, Indigenous communities and the general public at Public Information Centres.

An outline of key study milestones and overview of stakeholder engagement follows, noting that a fulsome record and documentation of the Communication and Consultation Plan is included as part of the Environmental Study Report.

Key milestones and main points of contact as follows:

- Notice of Study Commencement – issued May 11, 2017
- Technical Advisory Group Meeting #1 – June 2017
- Citizen Liaison Committee Meeting #1 – June 2017
- Public Information Centre #1 – June 29, 2017
- Technical Advisory Group – Meeting #2 June 2018
- Citizen Liaison Committee – Meeting #2 – June 2018
- Public Information Centre #2 – June 28, 2018
- Draft Environmental Study Report submission – Technical Advisory Group (includes regulatory and approval agencies) – December 21, 2018
- Technical Advisory Group Meeting # 3 – May 2019
- Citizen Liaison Committee Meeting #3 – May 2019
- Final Draft Environmental Study (revision to Draft Environmental Study Report December 21, 2018) – May 2019
    - Technical Advisory Group – May 13, 2019
    - Citizen Liaison Committee - Final Draft Environmental Study Report for review – May 15, 2019

Public

The Communication and Consultation Plan used various methods communication including notification, printed media, project mailbox, and correspondence providing information on the Study's status and progress at key Study milestones. Schaeffers hosted and has maintained a project page website through study duration. Interest members of the public on the project mailing list were provided with summaries of

Public Information Centre #1 and Public Information Centre #2 including display boards and opportunity for feedback.

Indigenous Communities (First Nations and Métis)

Indigenous communities per the MCEA are to be consulted. Schaeffers through early consultation efforts with the Ontario Ministry of Indigenous Relations and Reconciliation and Ministry of Environment Conservation Project initialized a Indigenous communities contact list that was expanded to include those provided by the City of Vaughan at the outset of the study.

Schaeffers engaged the services of First Nations Engineering Services Ltd. (FNESL) following PIC 1 and in preparation PIC 2 to facilitate and provide customized consultation with Indigenous Groups and organizations, potentially affected by the project.

Citizen Liaison Committee

A Citizen Liaison Committee (CLC) was formed early in the study process to provide interested community members with the opportunity to discuss options for the Kirby Road. The CLC included representation from the MacKenzie Ridge Ratepayers Association, Maplewood Ravines Ratepayers Association, residents at large from the City of Vaughan and Richmond Hill and the Vaughan Chamber of Commerce that were engaged through study duration and met at key study milestones including ahead of ahead of Public Information Centres and to present the recommended Preliminary Preferred Design Concept for the project. Schaeffers submitted the Final Draft Environmental Study Report to the CLC for any additional feedback in finalizing the Environmental Study Report. City staff attended Citizen Liaison Committee meetings to monitor the process.

Technical Advisory Group

A Technical Advisory Group (TAG) was formed early in the study process to provide a forum for regulatory authorities, approval agencies and the City to provide guidance to the Kirby Road EAS project team. The Technical Advisory Group included staff representation from York Region, Toronto and Region Conservation Authority (TRCA) York Region Transit, City of Richmond Hill, Ministry of Natural Resources and Forestry, Ministry of Environment Conservation and Parks, Ministry of Municipal Affairs and Housing and the City of Vaughan. The TAG met formally three times throughout the study duration and ahead of key study milestone providing guidance, feedbacks and technical review and comment of materials. The Draft Environmental Study Report was

provided for review in December 2018. A Final Draft Environmental Study Report May 2019 was provided to the TAG on May 13, 2019 for review and comment to finalize the Environmental Study Report.

Recognizing Rizmi Holdings Limited as sole private sector proponent, the City staff participated as a key review and approval agency as part of the Technical Advisory Group. City staff from the Policy Planning and Environmental Sustainability, Development Planning, and Infrastructure Planning and Corporate Asset Management departments participated on the TAG throughout study duration. City TAG members, led by Infrastructure Planning and Corporate Asset Management, facilitated internal engagement including cross department and multi-disciplinary technical reviews and preparation of comments and feedback to the Kirby Road EAS project team at study milestones.

The Kirby Road EAS project team engaged key TAG regulatory and approval agencies including MNRF, TRCA and MECP, in a round of consultation holding focused one-on-one meetings around key concerns and comments on the recommended preferred alternative road alignment 5 as presented at Public Information Centre #2 and Draft Environmental Study Report December 21, 2018. Key concerns and comments centered on weighting of natural environment relative to transportation, social and economic factors and highly recommended alternative road alignment 5 conformity with infrastructure policies of the Oak Ridges Moraine Conservation Plan.

Environmental Assessment Study Phases

The following outlines an overview of the Schaeffers planning and design process organized around the phases of the Municipal Class EA and the decision-making framework with input and feedback from stakeholders and the public at key milestones and through study duration.

Project Study Area and Limits

The project study area spans the 2 kilometres concession east-west and covers an area of approximately 170 hectares extending 200 metres north and south centered on existing 20.1 metre unopened road allowance owned by the City. Situated in the Oak Ridges Moraine Conservation Plan, a number of Provincially and Regionally designated environmentally sensitive areas are found both within and in proximity to the project study area east with limits between the existing signalized intersections of Dufferin Street and Kirby Road and Bathurst Street at Gamble Road at the City’s eastern boundary with the City of Richmond Hill.

Phases 1 and 2 – Problem and Opportunity Statement and Alternative Solutions

The EAS reaffirmed the need and justification for Kirby Road missing link connecting Bathurst Street to Dufferin Street as part of the preferred planning solution

Key elements of the study process completed under Phases 1 and 2 more specifically included review of the provincial regional and local planning policy and regulatory context framework and existing study project study area conditions.

City Transportation Master Plans (having satisfied Phases 1 and 2) and the York Region Transportation Master Plan provided broader Regional and City-wide transportation planning foundation for undertaking transportation planning and traffic analysis for the project study area.

The Kirby Road EAS project team undertook a localized project study area transportation assessment and updated traffic analysis corroborating the need and justification for extending Kirby Road between Bathurst Street and Dufferin Street as 36 metre arterial road as part of the preferred planning solution that:

- Contributes to completing and strengthening the east- west arterial grid network for all modes and as part of broader planned Kirby Road improvements from Bathurst Street to Weston Road in north Vaughan
- Facilitates active transportation including cycling facilities within the right-of-way
- provides regional connectivity including as part of a broader strategic goods movement corridor under the York Region Transportation Master Plan
- Necessitates traversing the Oak Ridges Moraine Conservation Plan area
- Necessitates a new watercourse crossing

Phase 3 – Alternative Design Concepts for Preferred Solution

Schaeffers work plan for Phase 3 of the planning and design process were framed and organized around two phases (3A and 3B) that included the, preparation of inventory of natural, socio-economic and technical environments and development long list of alternative road alignments

<u>Long List of Alternative Road Alignments and Screening</u>

A long list of nine road alternative options with varying horizontal alignments were developed with consideration to area sensitivities, fixed points and existing unopened

road allowance. More specifically, alternative alignments were generally identified and characterized by avoidance of the wetland and the extent of diversion (minor, moderate and major) as measured from an assumed centre line the of the existing unopened road allowance.

The long list of alternative options were screened and rationalized with consideration to a broad set of criteria grouped under technical socio-economic and natural environments.

Screening results provided the basis of short listing of the alternative road alignments options, to be carried forward that included Options 4, 5 and 6 and 6a (see attachment 1a) as presented for consultation at Public Information Centre #1.

Short List Road Alternative Alignment and Cross-Section Options: Net Effects Analysis

Schaeffers work plan key elements under this phase included:

- Confirm short list of alternative road alignments and identify alternative design concepts
- Prepare detailed inventory of natural, social, economic environments for short-listed options
- Identify potential impacts on the environment and develop mitigation measures
- Evaluate, select and confirm preferred design concept(s)

The short list of alternative road alignment options (4,5,6, and 6a) were developed including geometric aspects of the horizontal and vertical alignments, and were subject to a comparative analysis of the advantages and disadvantages as based on net effects analysis, evaluating the natural, transportation, social and economic environments. Road cross-sections for the 36 metre were the subject of separate identification of options examining the and evaluation.

Assessment and evaluation of the short-listed road alignment alternatives (4) and cross sections (5) was based and informed with inputs from cross-discipline technical study and investigations undertaken the Kirby Road EAS project team.

Phase 4 Environmental Study Report

Schaeffers prepared a Draft Environmental Study Report in December 2018

In December 2018, Schaeffers prepared a Draft Environmental Study Report documenting the planning and design process and basis of the preferred alternative road alignment 5 as the selected horizontal alignment for the Preliminary Preferred

Design Concept. Road alignment Alternative 5 follows a horizontal linear alignment centered on the City's unopened road allowance and included a bridge structure at a point crossing the Provincially Significant Wetland.

The Draft Environmental Study Report was provided to Technical Advisory Group December 21, 2018 for an informal 6-week technical review and comment period. Key concerns and comments centered on the natural environment including conformity of the preferred alternative road alignment 5 with the Oak Ridges Moraine Conservation Plan, significance of the natural environment and weighting relative to transportation social and economic environments.

Concerns and comments were the subject of the Kirby Road EA project team focused meetings with key regulatory review agencies leading to Schaeffers and the Kirby Road EAS project team revisiting and subsequently modifying and refining horizontal alignment 5.

Schaeffers prepared a revised Final Draft Environmental Study Report in May 2019 documenting a revised and modified alignment 5A

Building from nets effects analysis, assessment and comparative analysis through short-list of 4 alternatives (4, 5, 6 and 6a), the Kirby Road EAS project team revisited the preferred alternative road alignment 5. The alignment 5 was modified and refined to address individual polices of the Oak Ridges Moraine Conservation Plan and to avoid and minimize adverse effects including:

- Avoid crossing of Provincially Significant Wetland
- Avoid crossing of interior forest within 200m from the woodland edge
- Maximize the use of existing unopened road allowance
- Minimize encroachment into private property and property acquisition requirements

The refined preferred alignment 5A avoids crossing the Provincially Significant Wetland optimizes a crossing location of the creek and minimized impact to interior forest.

Notwithstanding that there are no current plans for north-south trail connections in the study area, the City of Vaughan staff advised preliminary preferred design concept is to provide for options at the crossing that consider and do not preclude the opportunity for north-south continuous pedestrian and cycling connecting to the TCPL forming part of the broader Super Trail.

Preliminary Preferred Design Concept

The following provides an overview of key aspects associated with Preliminary Preferred Design Concept as presented in the Final Draft Environmental Study Report May 2019.

Description

Key functional and structural elements of the Preliminary Preferred Design Concept (see Attachment 1a) including the following:

- Horizontal alignment that follows accommodates a new minimum 36 metre right-of-way following an alignment centered on the existing unopened road allowance and curves south avoiding the Provincially Significant Wetland (see attachment 1a)
- A 36 metre right-of-way that provides a multi-use path on both sides of the road facilitating shared pedestrian and cycling facility and allows opportunity to convert to separated pedestrian and cycling facilities in response to growth consistent with City's Pedestrian and Bicycle Master Plan
- Four (4) general purpose lanes, two (2) in each direction with lane widths that will accommodate and facilitate vehicles including buses and trucks per Region and City standards (see attachment 1b)
- Auxiliary centre and turn lanes facilitating vehicular travel demand, movements and operations at intersections (see attachment 1b)
- Structured crossing new water crossing – oversized culvert for the new watercourse crossing and retaining walls protecting the PSW and 200m buffer to interior. The culvert is sized to allow for wildlife passage and protect and not preclude the opportunity and option for a future north-south trail connection facilitating continuation of pedestrian and cycling linkages and connecting south to the planned future Vaughan Super Trail along the existing TCPL corridor
- Four (4) new culverts conveying local drainage of which the one located closest to Bathurst Street is designed and sized to protect and not preclude the opportunity for a future north-south trail connection facilitating continuation of pedestrian and cycling linkages and connecting south to the planned future Vaughan Super Trail along the existing TCPL corridor
- 100m retaining wall on the north side of the road along the edge that protects the 200m-deep interior woodland habitat to protect the forest
- 75m-long retaining wall will be required along the south side to preserve the existing cultural heritage house located at the in the southwest quadrant of the future Kirby Road and Bathurst Street intersection.

Preliminary Cost Estimate

Led by Schaeffers, the Kirby Road EAS project team prepared preliminary capital and property cost estimates and a lifecycle removal and replacement and operations 50 year cost analysis for the Preliminary Preferred Design Concept (refined preferred alignment 5A)

Capital cost estimate for the project including roadworks and associated infrastructure is in the order of $26.7 million. Preliminary cost estimate for property for the PPD (refined preferred alignment 5A) is in the order of $16.6 million as itemized in the table below.

Item Description	**Cost Estimate**
Engineering Fees	$3,358,072
Tree Removal	$298,000
Site Preparation	$1,292,505
Earthworks	$3,031,740
Services	$3,172,960
Roadworks	$4,335,050
Structures	$7,567,100
Miscellaneous	$124,744
Contingency	$3,477,026
Capital Cost Totals	**$26,657,196**
Property	$16,564,654
Total	**$43,221,850**

Lifecycle removal and replacements cost were estimated under that considered the construction of a similar road project and as based on preliminary capital cost estimate. Preliminary costs estimate over a 50 year lifecycle analysis considered the life, removal and replacement by item, recognizing one-time costs and adjusted for inflation. Overall forecasts under a 50-year analysis are in the order of $21.1M (2019 dollars) and $148.6 (future dollars) with annual operation and maintenance costs approximately $427K per year.

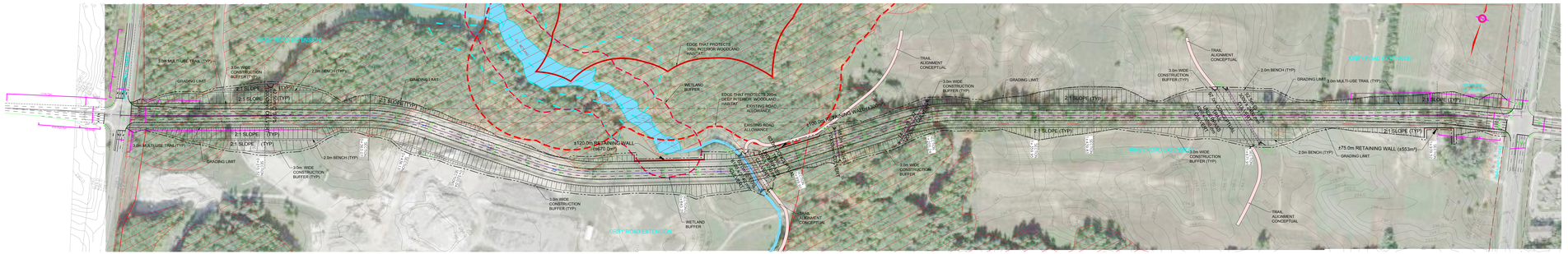
Preliminary cost estimates and analysis are subject to revision and refinement through future processes for advancing implementation and construction and securing and property acquisition respectively and over the lifecycle of the project.

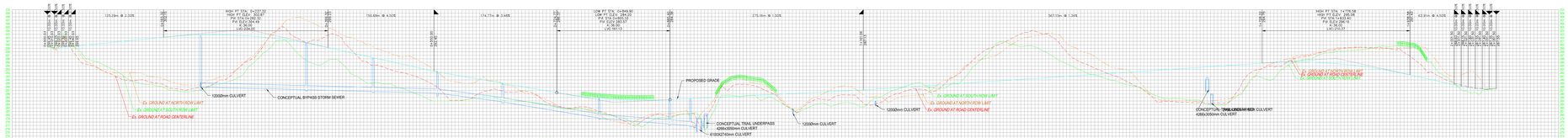
Project Implementation

The Final Draft Environmental Study Report May 2019, subject to finalizing the ESR to the City's satisfaction, outlines a process for provision to amend ESR and advancing Phase 5 implementation and construction including permits and approvals, as well as commitments to future additional environmental investigations and monitoring. Key future commitments include development of plans mitigating impacts of the natural environment, staking of the PSW, updates and additional studies for species, Headwater Drainage Assessment, and completion a Stage 2 Archaeological Assessment, resource specific cultural heritage assessment for the residence at 11490 Bathurst Street.

Attachment 1a - Recommended Preliminary Preferred Design Concept

PRELIMINARY





SCALE:
H 1:1500
V 1:300

LEGEND

- DENOTES INTERIOR FOREST
- DENOTES PROVINCIALLY SIGNIFICANT WETLAND
- DENOTES EXISTING GROUND CONTOUR ELEVATION
- DENOTES SEEPS AND SPRINGS
- DENOTES 3.0m (TYP) LIMIT OF CONSTRUCTION BUFFER
- DENOTES SLOPES IN FILL
- DENOTES SLOPES IN CUT
- DENOTES WATER COURSE
- DENOTES CONCEPTUAL TRAIL ALIGNMENT
- DENOTES CONCEPTUAL BYPASS STORM SEWER
- DENOTES MANHOLES
- DENOTES CATCH BASIN

REVISIONS			
No.	DESCRIPTION	By	Date

APPROVED AS TO FORM AND CONTENT, UNDER THE PROFESSIONAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER, AS A MEMBER OF THE PROFESSIONAL ENGINEERS OF ONTARIO AND ARCHITECTS OF ONTARIO

DATE: Oct 24, 2018 (Date of Approval) Not Valid Until Sealed, Dated and Signed by the Professional Engineer

KIRBY ROAD EXTENSION CLASS EA

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PROJECT No. 2018-4339 DRAWING No.

SCALE

VAUGHAN

Kirby Road Extension Class EA
PLAN AND PROFILE ALIGNMENT 5A

DESIGNED BY: D.L.	DATE: DEC. 2018	CHECKED BY: N.L.	
DRAWN BY: D.L.		APPROVED BY: P.S.	
SCALE: 1:1500 AS SHOWN		DWG. No. PP-5A	

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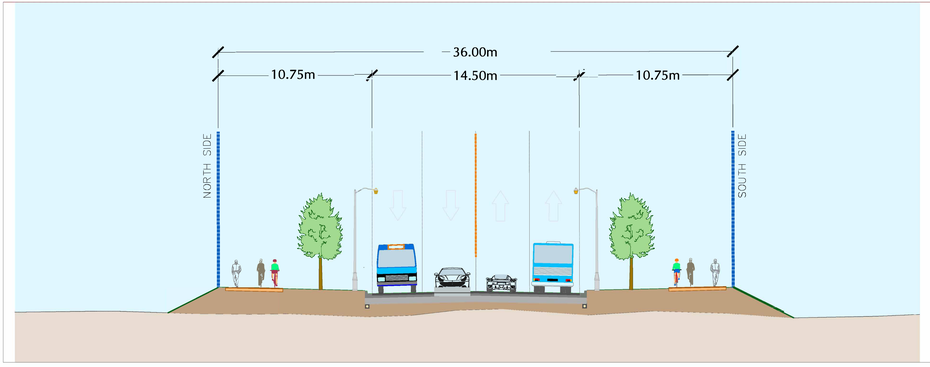
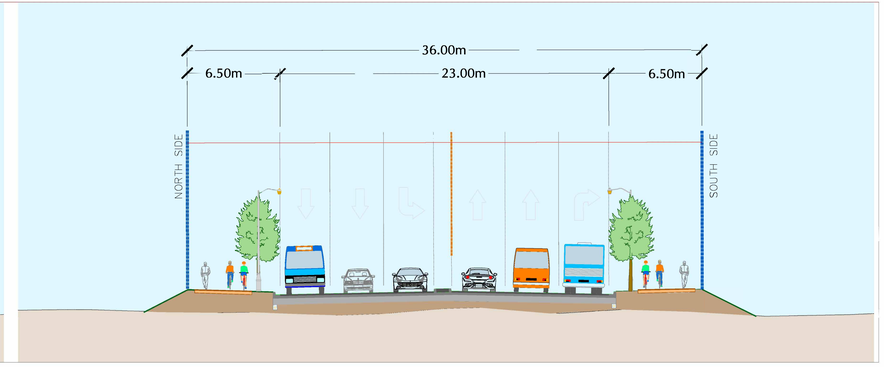
Attachment 1b - Recommended Preliminary Preferred Design Concept
Cross-Section

MID-BLOCK	AT INTERSECTIONS WITH AUXILIARY LANES





REVISIONS

No.	DESCRIPTION	By	Date

RIZMI RESIDENTIAL SUBDIVISION

SCHAEFFERS

PROJECT No. 2018-4338 DRAWING No.

VAUGHAN

Kirby Road Extension Class EA
PREFERRED DESIGN CONCEPT
FOR ROAD CROSS SECTION

DESIGNED BY: D.L.	DATE: DEC. 2018	CHECKED BY: N.L.	
DRAWN BY: D.L.		APPROVED BY: P.S.	
SCALE: N.T.S.		DWG. No. DET-1	

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