

Staff Report



Development Services Department

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REPORT TO: Community and Infrastructure Services Committee

DATE OF MEETING: December 2, 2024

SUBMITTED BY: Chris Spere, Director of Engineering, 519-783-8897

PREPARED BY: Eric Riek, Project Manager, 519-741-2200 ext. 7330

WARD(S) INVOLVED: 4

DATE OF REPORT: September 4, 2024

REPORT NO.: DSD-2024-374

SUBJECT: Biehn Drive and Sanitary Trunk Sewer Environmental Assessment

RECOMMENDATION:

That the Biehn Drive and Trunk Sanitary Sewer Extension Class Environmental Assessment (EA) - Environmental Study Report (ESR), prepared by BT Engineering, dated November 2024, be received; and,

That the Biehn Drive and Trunk Sanitary Sewer Extension Environmental Study Report (ESR), be filed with the Ministry of the Environment Conservation and Parks (MECP) for the mandatory thirty (30) day review period as required by the Environmental Assessment (EA) Act.

REPORT HIGHLIGHTS:

- The key finding of this report is the recommendation of Alternative 1 (**See Figure 3**) as the preferred road and sewer alignment for Biehn Drive and the Biehn Drive Trunk Sanitary Sewer.
- This project will be funded through Development Charges.
- Community engagement included three public information meetings with the first virtual meeting taking place April 20th, 2021. The second virtual public information meeting took place on November 17th, 2021. One in-person public information meeting was held on June 20th, 2024. In addition, the project was presented to the Kitchener Environmental Committee on June 17th, 2021, October 21st, 2021, and June 20th, 2024. Lastly, the project was presented to the Regional Environmental Committee on November 29th, 2021.
- This report supports the delivery of core services.

EXECUTIVE SUMMARY:

The City of Kitchener (City) has undertaken a Schedule C Class Environmental Assessment (EA) Study to develop a transportation plan for the extension of Biehn Drive westerly to the Robert Ferrie Drive extension in the City of Kitchener. The Biehn Drive extension will include municipal services including a trunk sanitary sewer, storm sewer/ditches and watermain. Biehn Drive is a Major Collector Road in the City of Kitchener Official Plan. The Study has

*** This information is available in accessible formats upon request. ***
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developed and evaluated alternatives for the alignment of the Biehn Drive extension, intersection locations/type and municipal services while minimizing environmental, social, and cultural impacts of the project. The existing sanitary sewer network has been constructed to accommodate the future service areas to connect directly to Biehn Drive. No other alternative exists for the sanitary sewer network other than to connect to Biehn Drive.

Following direction from Council on March 20th, 2023, additional transportation and geotechnical studies have been completed and are integrated into the evaluation considerations. One additional public consultation (PIC) took place on June 20th, 2024, to present findings of updated studies. Details of this PIC are included in the appendix of the Environmental Study Report.

Additional changes made to the Environmental Study Report are listed below:

- Modified Alternative 4 to include a Multi-Use Trail through the wetland and possible future traffic calming measures for Caryndale Drive;
- Included “Do Nothing” alternative through the short-listed alternatives scoring process;
- On January 25th, 2024, after a two-year suspension, formal Endangered Species Act (ESA) protections for Black Ash (tree) commenced with new rules for protection of the species. There were approximately 6 confirmed candidate Black Ash trees within the proposed future road allowance. Due to these legislative changes, additional updates were incorporated into the evaluation considerations;
- Revised utility scoring measurements based on the Likert Scale.

The following alternatives were considered and evaluated (see **Figure 1** below):

- Do Nothing Alternative - includes extension of services following alternative 1 alignment to facilitate future development only (no road, multi-use trail or maintenance access).
- Alternative 1 – connect Biehn Drive to Robert Ferrie Drive – East Alignment
- Alternative 2 – connect Biehn Drive to Robert Ferrie Drive - Central Alignment
- Alternative 4 – connect Biehn Drive to Robert Ferrie Drive – via Caryndale Drive. This alternative was updated to include a multi-use trail through wetland.

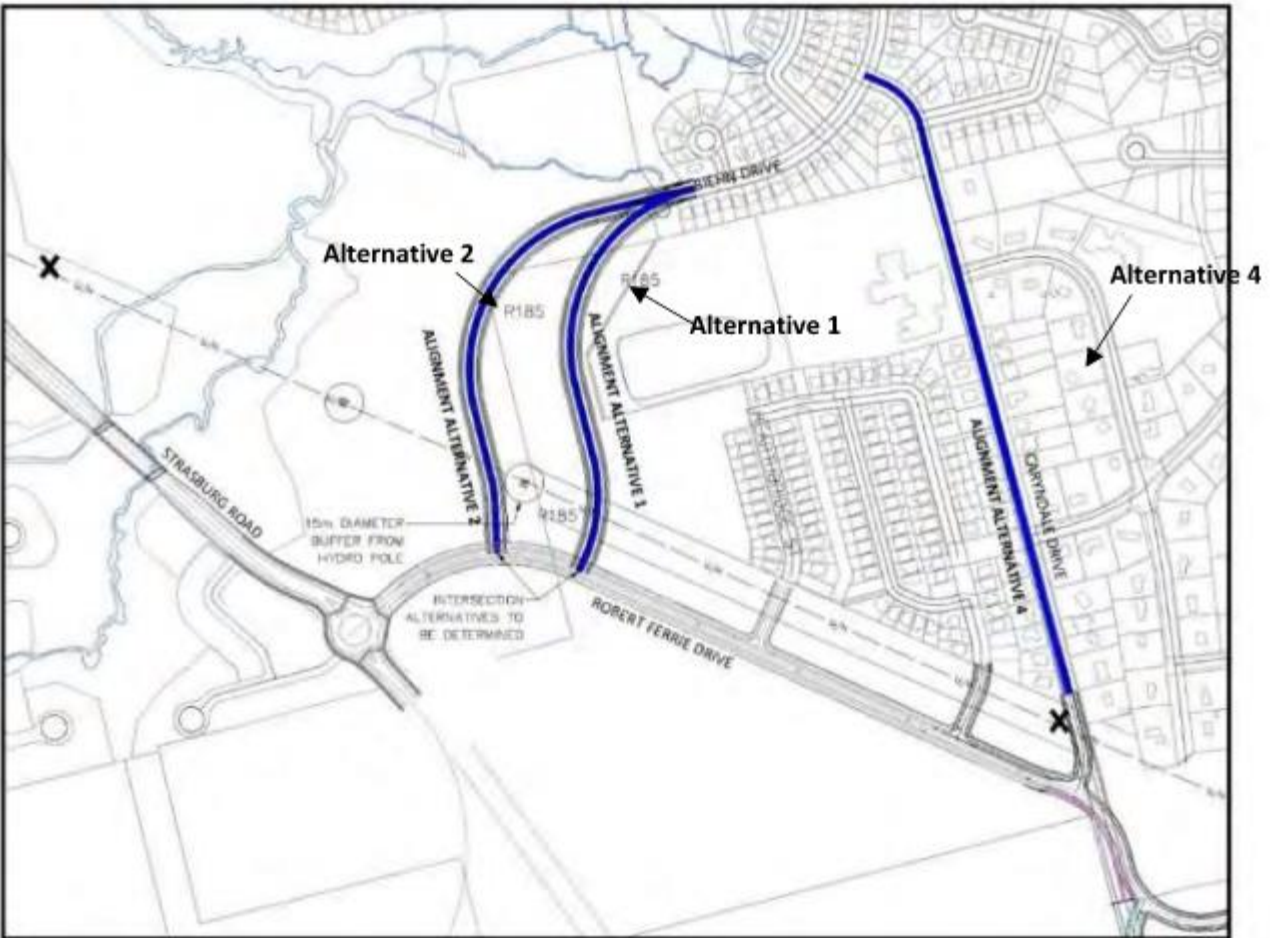


Figure 1 – Biehn Drive Alignment Alternatives

Based on the results of the revised Environmental Assessment, Alternative 1 is the preferred option. This recommendation conforms to the City of Kitchener's Official Plan and Integrated Transportation Master Plan and accommodates the associated municipal servicing. It minimizes the impacts to the Provincially Significant Wetland by eliminating the on-street parking and provides a high level of land use planning efficiency to the lands available for development. In addition, this alternative redistributes vehicles travelling to Robert Ferrie Drive from Caryndale Drive and Brigadoon Public School to Biehn Drive, a designated Major Collector in the City of Kitchener.

BACKGROUND:

Since the mid-2000's the road network and municipal servicing for the Doon South and Brigadoon areas of the City of Kitchener have planned for area development and evolving transportation needs. Several planning documents including the Official Plan and Transportation Master Plan (TMP) have identified the need to extend Biehn Drive westerly to the future Robert Ferrie Drive extension and ultimately to Strasburg Road.

The Biehn Drive Extension would be a major collector road, as identified in Schedule B of the City of Kitchener's Official Plan Amendment. This link would accommodate vehicles to and from the Brigadoon community and would help mitigate cut-through traffic on local streets within the community. A collector road collects traffic from local roads within the community and provides connectivity to high tier arterial roads including Strasburg Road.

Future development within the Doon South and Brigadoon communities requires a defined alignment for the extension of Biehn Drive to Robert Ferrie Drive as part of the area road network and to accommodate municipal services. The sanitary sewer network must connect to Biehn Drive.

To determine the preferred alternative, this Study has considered the natural, social environments and the future land use in the Study Area. The extension of Biehn Drive and the associated municipal servicing has been a longstanding part of the integrated plan for the Brigadoon neighbourhood.

The EA Study provides the opportunity to: improve accessibility to the local community by providing additional network links; define a multi-modal transportation plan to support travel within the local neighbourhoods; accommodate the required and previously planned sanitary sewer extension; and allow development to proceed on lands that currently require the road right-of-way plan to be defined prior to developing the land use plan.

On March 20th, 2023, Council passed the following resolution:

"That Council directs staff to complete further studies to update the Biehn Drive and Trunk Sanitary Sewer Extension Class Environmental Assessment - Environmental Study Report, prepared by BT Engineering, dated January 18th, 2023; and,

That Council directs staff to complete one additional consultation to be scheduled once the additional studies have been completed; and,

That Council directs staff to use the remaining balance of the budget approved in 2020 for this EA to complete the additional work; and further,

That staff reports back to Council with an updated Biehn Drive and Trunk Sanitary Sewer Extension Class Environmental Assessment (EA) Environmental Study Report in late 2023 or early 2024."

Additional transportation and geotechnical studies have now been completed and are integrated into the evaluation considerations.

REPORT:

After receiving direction from Council, Engineering Staff have completed the following activities:

- Geotechnical Investigation – Proposed Trunk Sewer, Biehn Drive South Extension, Cambium Inc., March 14th, 2024:
Six Boreholes installed August/September 2023. Three Boreholes converted to monitoring wells to measure groundwater level fluctuation;
Preliminary findings: Soils appear suitable for trenchless installation of sanitary sewer and watermain;
- Dewatering Assessment, Biehn Drive Extension, Cambium Inc., March 14th, 2024;

- Confirmed EASR registration (water taking permit) for installation of entry/receiving pits (trenchless installation) would be required based on dewatering rates;
- Doon South Community Area Transportation Study, Paradigm Transportation Solutions Ltd., Feb. 28th, 2024:
 - Under existing conditions, most intersections are operating at acceptable levels;
 - Approximately 2,841 units remain to be built in Doon South and Brigadoon areas;
 - Within the existing road network, Caryndale Drive continues to function as a major collector (notwithstanding its intended function as a minor collector road) and will continue to do so if Biehn Drive is not extended to Robert Ferrie Drive extension;
 - Future extension of Robert Ferrie Drive to Strasburg Road and Strasburg Road to New Dundee Road will help redistribute traffic volumes on Caryndale Drive;
 - Extension of Biehn Drive to Robert Ferrie Drive is justified to provide a diversion route around Caryndale drive corridor for residents living on and adjacent to Biehn Drive and to ensure Caryndale Drive better serves its function as a minor collector based on existing design details (traffic calming and presence of schools in the corridor);
- Evaluation criteria was updated based on the results of the additional studies;
- Refinement of Alternative 4 to remove maintenance access path through wetland and replace with a multi-use trail, and include improvements such as traffic calming and multi-use trails along Caryndale Drive corridor;
- Included “Do Nothing” alternative through the short-listed alternatives scoring process which further justifies the need for the road. The “Do Nothing” option was not included in the scoring process in the previous report;
- In addition to these activities, on January 25th, 2024 after a two year suspension, formal Endangered Species Act (ESA) protections for Black Ash (tree) commenced with new rules for protection of the species. There were approximately 6 confirmed candidate Black Ash trees within the proposed future road allowance. Due to these legislative changes, additional updates were incorporated into the evaluation considerations;
- One additional public consultation (PIC) took place on June 20th, 2024, to present findings of updated studies, details and comments are included in appendix of Environmental Study Report;
- Revised utility scoring measurements based on the Likert Scale (see **Figure 2**). This rating scale is more defensible and allows a greater range of scoring instead of the extremes (1 or 0).

Negative impact / Highly Unsatisfactory	0.00
slightly Negative impact	0.25
Neutral / No change / No impact	0.50
slightly positive impact	0.75
Positive Impact / Exceeds Criteria / Highly Satisfactory	1.00

Figure 2 – Utility Measurements Based on the Likert Scale

BT Engineering completed a preliminary design of the Technically Preferred Alignment (TPA) and the Environmental Study Report (ESR) for the Biehn Drive and Trunk Sanitary Sewer.

As part of the preliminary design of the new TPA (see **Figure 3** below) and based on input from the public, agencies and Indigenous Communities; the project team had the opportunity to refine the alignment further based on the following criteria:

Through the Provincially Significant Wetland (PSW), the cross section (see **Figure 4**) will be identical to the cross section beyond the PSW, except that it will be revised to:

- Remove the Multi use trail (MUT) from the north (west) side of the road and replace with a sidewalk on the west side of the road
- Allow for a 14.5 m right-of-way through the wetland
- No Parking within the PSW
- Provision for a wildlife passage culvert within the PSW
- Lighting with full cut off fixtures
- Opportunity to enhance naturalization of PSW Adjacent Lands

Outside the wetland, the cross section (see **Figure 4**) will be reduced to 23.5 m through the subdivision, reducing the width of the boulevard on the east side to accommodate the MUT.

The new TPA was refined based on discussions with the directly affected landowners, and developed to the Preliminary Design level of detail, including road geometry, cross-sections, drainage and stormwater management, municipal services and other utilities, and intersection design.

An existing conditions assessment (including Traffic Analysis, Natural Environment, Socio-Economic Environment, Cultural Environment, Transportation and other Municipal Infrastructure); the development and assessment of conceptual alignment alternatives; selection of the Technically Preferred Alignment; Preliminary Design of the new Technically Preferred Alignment; commitments to environmental protection, mitigation and monitoring and additional investigations associated with the Preliminary Design scheme; and the results of the stakeholder consultation program have been documented in the Environmental Study Report.

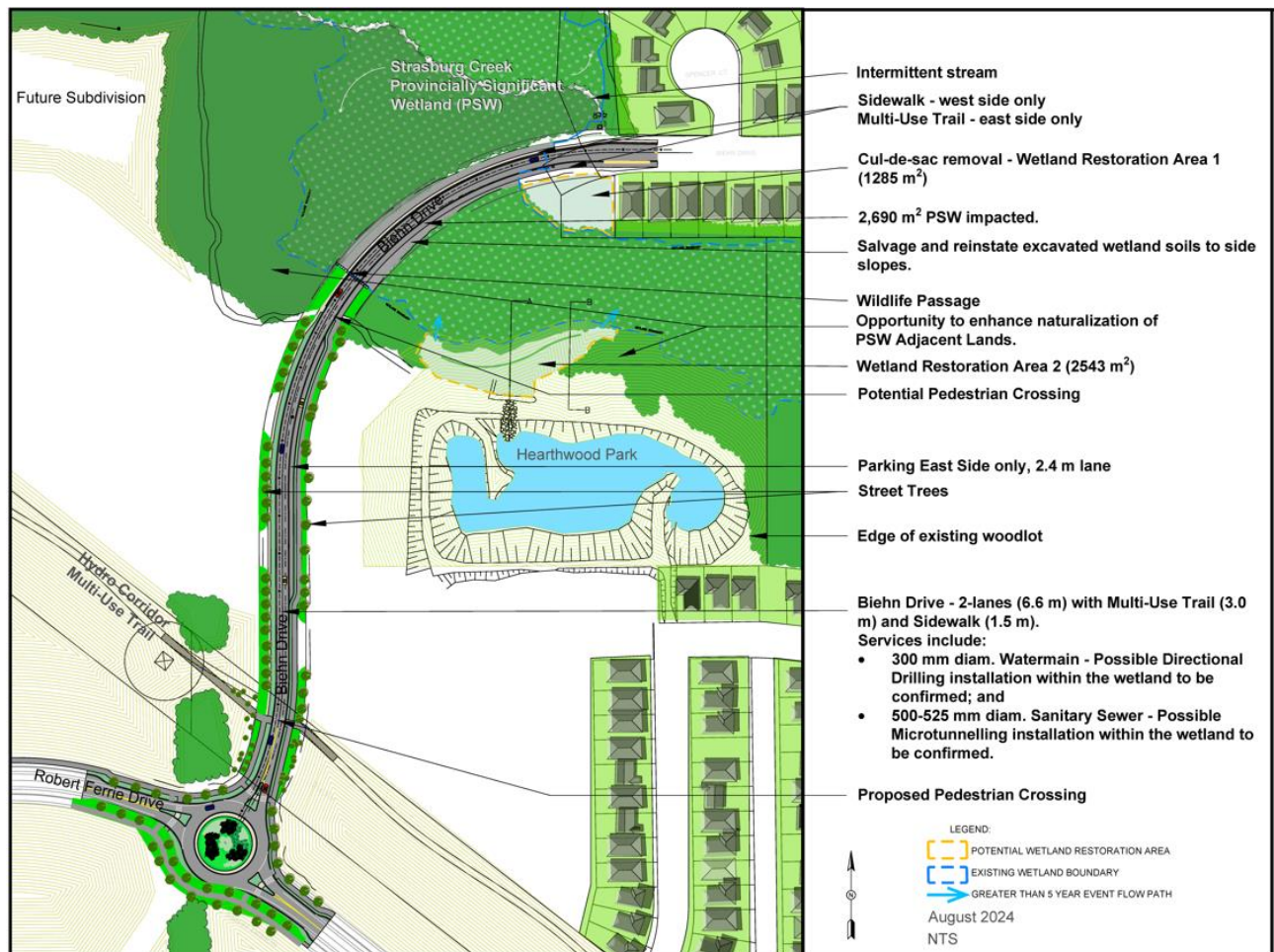


Figure 3 – Technically Preferred Alignment

Problem Statement

The planned extensions of Strasburg Road and Robert Ferrie Drive combined with new development will result in changes to the traffic demands and patterns within the Doon South and Brigadoon communities. To address those changes, the City of Kitchener Transportation Master Plan and Official Plan have identified an extension of Biehn Drive from its current terminus to Robert Ferrie Drive. The Study has revisited the need for an extension of Biehn Drive and evaluated potential alignment alternatives if an extension of Biehn Drive is still recommended.

The Study has considered the natural, social environments and the future land use in the Study Area (see **Figure 5**). The study is assessing the road network to provide safe, reliable transportation access to communities within Doon South and Brigadoon considering vehicular, pedestrian, cycling and truck routes. The road project was completed as a Schedule C undertaking.

The Project provides the opportunity to:

- Improve accessibility to the local community by providing additional network links;
- Define a multi-modal transportation plan to support travel within the local neighbourhoods; and
- Allow development to proceed on lands that currently require the infrastructure requirements to be defined prior to developing the land use plan.

In parallel, the City is planning for new municipal services that are required to serve future development to the south. The future watermain and sanitary trunk sewer crossing of the Provincially Significant Wetland (PSW) from the existing services at the end of Biehn Drive are being completed as a Schedule B project, which is included in the overall Schedule 'C' EA.

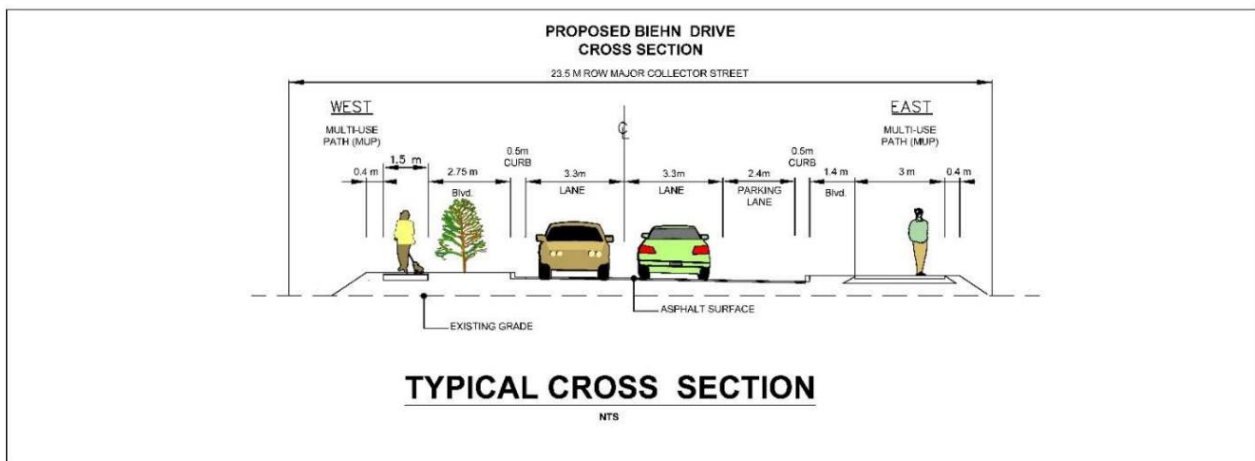
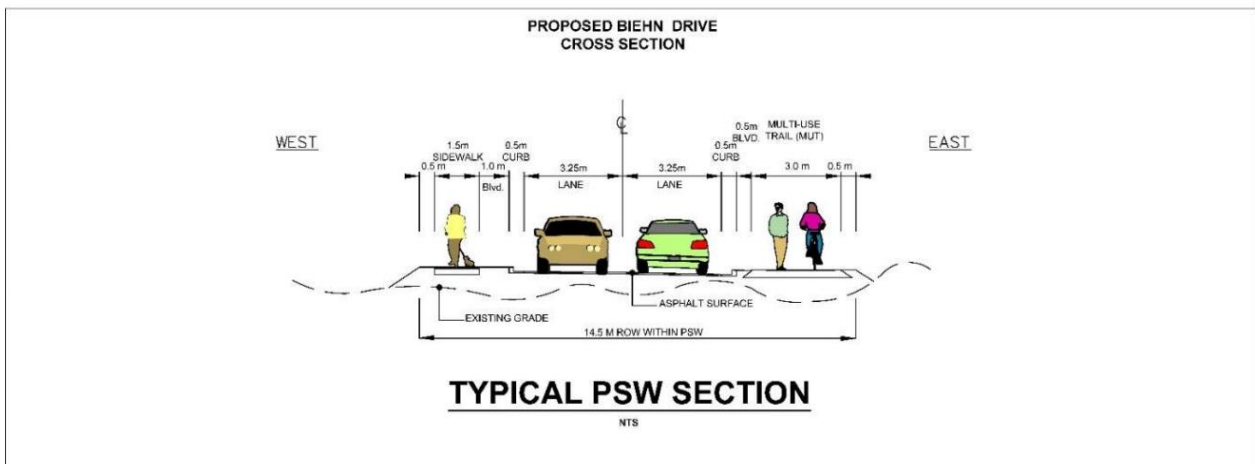


Figure 4 – Typical Cross Section Through Wetland and Outside the Wetland

The EA Study provides the opportunity to: improve accessibility to the local community by providing additional network links; define a multi-modal transportation plan to support travel within the local neighbourhoods; accommodate the required and previously planned sanitary sewer extension; and allow development to proceed on lands that currently require the roadway right of way (ROW) plan to be defined prior to developing the land use plan.

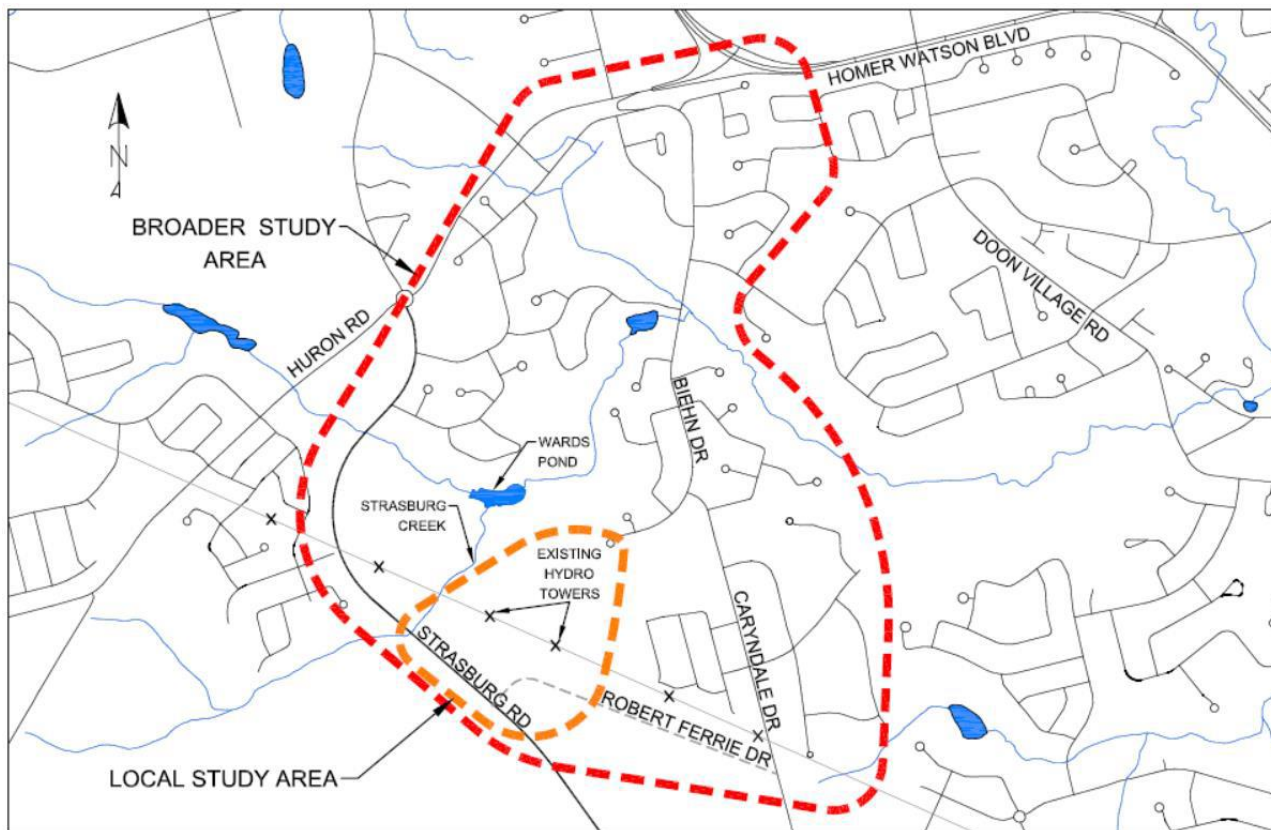


Figure 5: Study Area

Municipal Class EA Process

This project was undertaken to satisfy the Provincial Environmental Assessment Act following the “Municipal Class Environmental Assessment” process for a Schedule C project as amended by the Municipal Class EA 2015. This document specifies the procedures required to plan specific road projects according to an approved provincial planning process.

The Class EA process was undertaken in a series of phases commencing with problem identification and culminating in the filing of this ESR, subject to approval by Kitchener Council.

The Class EA process includes an evaluation of all reasonable alternatives and the selection of a preferred alternative(s) with acceptable effects (including avoidance and mitigation of any residual adverse effects) on the natural and social/cultural environments.

The Municipal Class EA process involves five phases:

Phase 1: Identify the Problem

Phase 2: Alternative Solutions

Phase 3: Alternative Design Concepts for the Preferred Solution

Phase 4: Environmental Study Report (ESR)

Phase 5: Implementation

Identification and Evaluation of Alternatives

The evaluation of alternatives was completed in a two-step process. The initial step was to consider and validate previous decisions of the Transportation Master Plan as alternative planning solutions. For this study, the alternative planning solutions included:

- Alternative 1 – Do Nothing
- Alternative 2 – Transportation Demand Management (TDM)
- Alternative 3 – Use of Existing Local Roads
- Alternative 4 – Limit Land Use Development
- Alternative 5 – Extend Biehn Drive

Based on the preliminary review of Alternative Planning Solutions, Use of Existing Local Roads and Extend Biehn Drive were recommended for further evaluation. Transportation Demand Management was not carried forward as a standalone solution but will be incorporated with the preferred alternative as part of the recommended plan.

Generation of Preliminary Design Alternatives

A “long list” of preliminary design alternatives was generated, based on identified needs, to ensure consideration of a wide range of transportation alternatives (i.e. all reasonable alternatives are considered). The preliminary alternatives were categorized under 3 groups:

- a. Alignment Alternatives (road and sanitary sewer and municipal services)
- b. Cross Section Alternatives
- c. Intersection Alternatives

Preliminary design alternatives were developed for each group of alternatives. These alternatives were presented to the public at the PIC’s and was expanded based on comments received from the public.

The Project Team participated in and reviewed the analysis and evaluation for all alternatives. The Technically Preferred Alternative (TPA) was presented to the public at the second and third PICs.

The following alternatives were considered and evaluated (see **Figure 1**):

- Do Nothing Alternative - includes extension of services following alternative 1 alignment to facilitate future development only (no road, multi-use trail or maintenance access).
- Alternative 1 – connect Biehn Drive to Robert Ferrie Drive – East Alignment
- Alternative 2 – connect Biehn Drive to Robert Ferrie Drive - Central Alignment
- Alternative 4 – connect Biehn Drive to Robert Ferrie Drive – via Caryndale Drive. This alternative was updated to include a multi-use trail through wetland.

The Evaluation Team members were responsible for completing separate weighting exercises which provided independent perspectives of the relative importance of factor groups and sub-factors for each specific evaluation. The results of the weighting exercise are illustrated in **Figure 6** below. To validate the weighting exercise, a sensitivity testing program was undertaken to determine whether the Technically Preferred Alternative (TPA) would have changed if a particular factor group was assigned a higher or lower importance than the group average. This ensures greater confidence in the selection process.

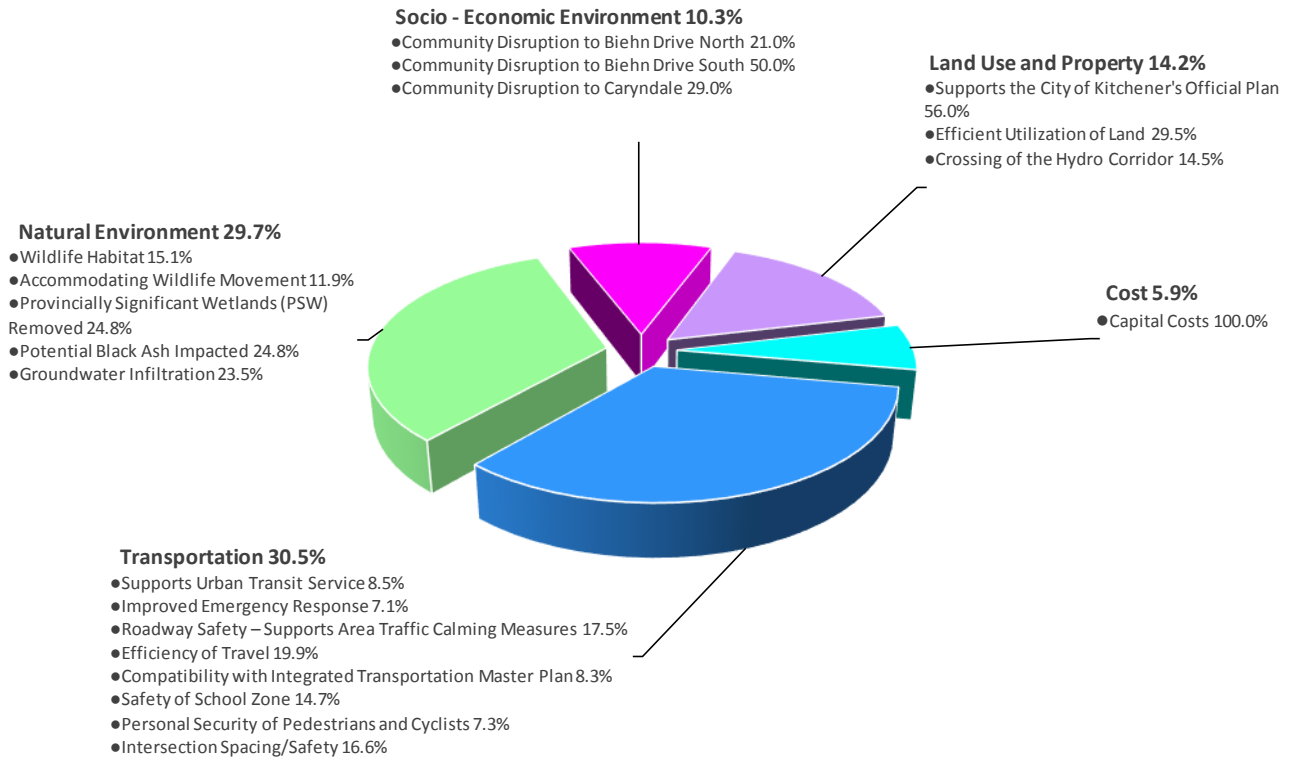


Figure 6 – Global and Sub-Factor Weights

Each alternative was rated based on the Likert Rating Scale; results are shown in **Figure 7** below. The technically preferred alternative (TPA) is Alternative 1 (see **Figure 3** above).

(Average Weights of Evaluation Team)

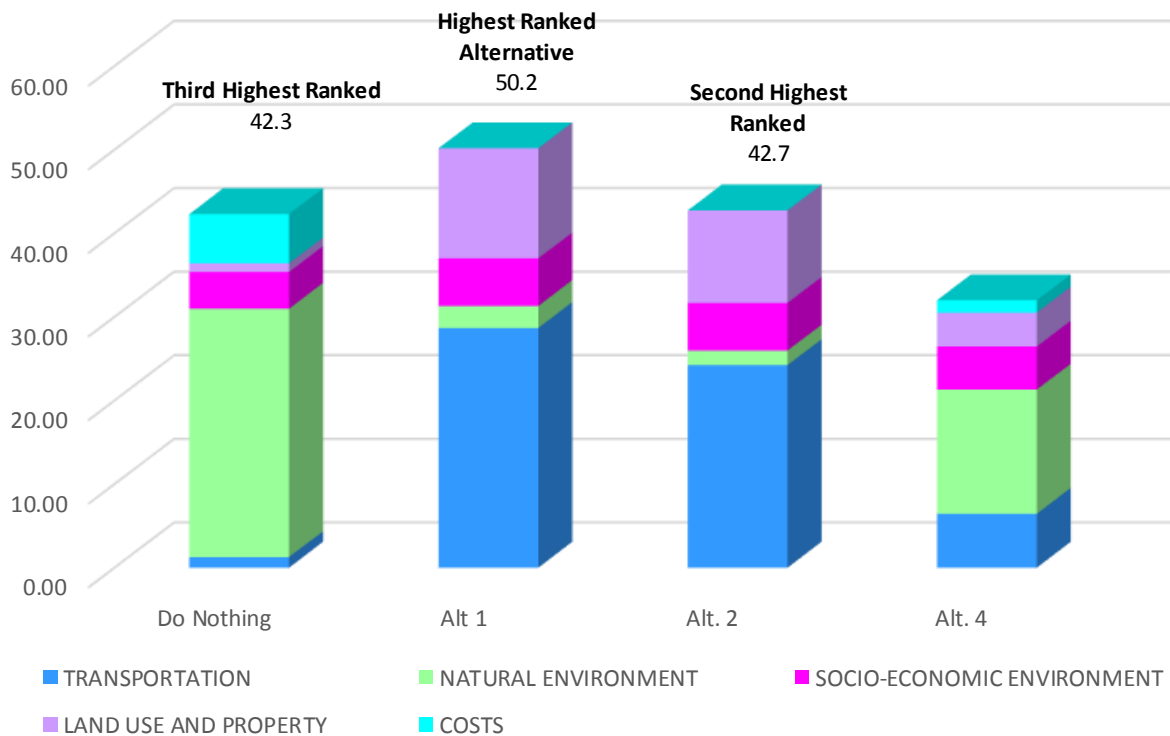


Figure 7 – Alternative Rating Totals

The MECP and an independent consultant have reviewed the EA report and have confirmed compliance with EA Act and processes followed.

Recommended Plan

After Public Information Centre (PIC) No.3, the TPA was subject to refinements based on community input.

The Biehn Drive extension recommended plan includes:

- New 2-lane road connecting the current Biehn Drive terminus to the future Robert Ferrie Drive
 - Alignment will be east of the Hydro Tower
 - Cross section will include 3.3 m lanes with curb/gutter (0.5 m)
- Active transportation improvements will include:
 - 3.0 m MUT on the east side of the road from Robert Ferrie Drive to the wetland (see Statement of Flexibility Section **Error! Reference source not found.9.1**)
 - 1.5 m sidewalk on the west side from the Hydro Easement to Biehn Drive.
 - Boulevard (varying width, minimum 0.5 m)
 - Pedestrian crossings at:
 - The Hydro easement
 - The south edge of the wetland
- Roundabout at the intersection of Biehn Drive and Robert Ferrie Drive (per the recommendations of the Robert Ferrie Drive Environmental Assessment)
- Installation of municipal services beneath the road alignment including:
 - Sanitary trunk sewer (525 mm diameter)
 - Storm sewer
 - Watermain
- Natural environment mitigation including:
 - Construction of one or more concrete box culverts with a 1.0 m span and 1.0 m rise for the provision of wildlife passage under the Biehn Drive extension in the area of the Strasburg Creek PSW (final sizing, design and number of crossings to be defined in detail design).
 - Implementation of permanent wildlife fencing
 - Stormwater quality control of northern outlet to the PSW (oil grit separator)
 - Target desirable compensation for wetland loss including:
 - 10:1 tree replacement
 - 1:1 wetland replacement (on-site)
 - 2:1 wetland replacement (off-site)
 - The feasibility for compensation to be reviewed with the future determination of the offsets from the PSW to development lands as an opportunity for naturalization and well as the re-naturalization of the removal of the existing cul-de-sac on Biehn Drive.

Staff recommend that the Biehn Drive and Sanitary Trunk Sewer Environmental Study Report (ESR) prepared by BT Engineering, dated November 2024, be received.

Further, staff recommend that the Biehn Drive and Sanitary Trunk Sewer Environmental Study Report (ESR) be filed with the Ministry of the Environment Conservation and Parks

(MECP) for the mandatory thirty (30) day review period, as required by the Environmental Assessment (EA) Act. This will provide the opportunity for the public and agencies to review the document and provide comments to the Ministry of the Environment Conservation and Parks (MECP) and City, if any.

STRATEGIC PLAN ALIGNMENT:

This report supports the delivery of core services.

FINANCIAL IMPLICATIONS:

Capital Budget – This project will be funded through Development Charges. The current allocation for this project is \$8,890,000.

Operating Budget –Future maintenance and snow clearing will be incorporated into the operating budget

COMMUNITY ENGAGEMENT:

INFORM – This report has been posted to the City’s website with the agenda in advance of the council / committee meeting.

CONSULT – Community engagement included two virtual public information centres with the first meeting taking place April 20th, 2021. The second virtual public information centre took place on November 17th, 2021. In addition, the project was presented to the Kitchener Environmental Committee on June 17th, 2021, October 21st, 2021 and June 20th, 2024. The project was presented to the Regional Environmental Committee on November 29th, 2021. Lastly, the project was presented to Community and Infrastructure Services Committee on February 13th, 2023.

An in-person Public Information Centre took place on June 20th, 2024, to present the updated studies and changes to report.

PREVIOUS REPORTS/AUTHORITIES:

- [DSD-2022-188](#) Biehn Drive and Sanitary Trunk Sewer Environmental Assessment
- [DSD-2023-096](#) Biehn Drive and Sanitary Trunk Sewer Environmental Assessment
- [DSD-2024-244](#) Biehn Drive and Sanitary Trunk Sewer Environmental Assessment Update
- September 1989, City Council approved the Brigadoon Community Plan. The Community Plan was processed concurrently with amendments to the Official Plan which established a collector and arterial road network for the Community. The importance of connecting the Brigadoon Community to Strasburg Road was recognized and three collector road connections were proposed at that time including the extension of Biehn Drive. Approved transit routes included Biehn Drive, Strasburg Road and Huron Road. The Biehn Drive extension has been carried forward in all subsequent versions of the City of Kitchener Official Plan.
- February 1994, McCormick Rankin on behalf of the City of Kitchener completed the report “Doon South - Brigadoon Transportation Network and Corridor Study”. The report recognized the need to comprehensively plan a road network to accommodate growth

associated with a large geographic area. The process was undertaken in the form of the Environmental Assessment Act. The report recommended several interrelated transportation corridor network improvements and reaffirmed the need for the Biehn Drive extension. Kitchener Planning and Economic Development Committee approved the report and further recommendations dated June 20th, 1994 which among other matters, directs an amendment to the Kitchener Official Plan to incorporate the collector road network which includes Biehn Drive.

- The Brigadoon Community Plan was updated and approved by Kitchener City Council on June 29th, 2004. The updated Community Plan provides for the extension of Biehn Drive to Strasburg Road and recognizes Strasburg Road as a 26 metre wide secondary arterial road.
- In June 2013, the final “Kitchener Integrated Transportation Master Plan” was approved. The master plan informed the approval of the City’s current “in effect” Official Plan. Biehn Drive extension is identified as a major community collector street. Biehn Drive is shown as extending in a southwesterly direction and connecting to Strasburg Road.
- City Planning Staff Report (CSD-14-037) prepared in support of the Official Plan Amendment (OPA) and environmental assessment (EA) for the Robert Ferrie Drive extension (June 2014) includes the following conclusion: *“In order to continue improving the traffic and transportation needs in the Brigadoon and Doon South communities the Transportation studies done as part of the Integrated EA and OPA process confirmed that the extension of Biehn Drive is necessary to meet the current and projected transportation needs of the Brigadoon/Doon South Communities. It is therefore also recommended that the EA process for the extension of Biehn Drive commence as soon as possible and further that it be concurrent with the EA for the extension of sanitary sewer services along Biehn Drive.”*
- March 2019, LPAT’s partial approval of Official Plan Amendment No. 103. The integrated transportation system policies of the Official Plan are supported by the City’s Transportation Master Plan. Map 11 (Integrated Transportation System) of the in-effect Official Plan identifies the approved Robert Ferrie Drive alignment and confirms that Biehn Drive will be extended from its current terminus southerly and connect to Robert Ferrie Drive. The final alignment of Biehn Drive is to be constructed within the corridor identified on Map 11.
- *Municipal Act, 2001*
- *Planning Act*

APPROVED BY: Justin Readman, General Manager, DSD

ATTACHMENTS:

Attachment A – Environmental Study Report (ESR), City of Kitchener Biehn Drive Municipal Class Environmental Assessment November 2024