

The background features a 3D-rendered scene of a road with a dashed white center line curving into the distance. Several red, teardrop-shaped location pins are placed along the road. The scene is set against a clear blue sky with a bright sun in the upper right corner, creating a lens flare effect. The overall aesthetic is clean and modern.

Ray Angod

City of Kitchener
Community and
Infrastructure Services
Committee:
Biehn Drive Extension
Delegation

December 2, 2024

"The Biehn Drive Extension would be a major collector road... and would help mitigate cut-through traffic on local streets within the community."¹

Biehn Drive Extension²

Neighbourhood	Approximate Number of Dwelling Units	ITE Trip Generation Rate	Total Daily Vehicle Trips
Neighbourhood 1 (Biehn Drive North Neighbourhood)	260	Single-Family Detached Housing	2452
Neighbourhood 2 (Marl Meadow Neighbourhood)	475	9.43 Daily Trip Generation Rate/Dwelling Unit	4480
Neighbourhood 3 (Biehn Drive South Neighborhood)	265		2490
Neighbourhood 4 (Caryndale Neighbourhood)	225		2122

9.43 Daily Trip Generation Rate:
11,544 vehicle trips for 1,225 residences

Mississauga Proposed Residential Development³

Table 4 – Site Trip Generation

Land Use		Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential Condominium	Units: 207						
ITE Code 221 Multifamily Housing (Mid-Rise)	Distribution Equation Rate	26%	74%	100%	61%	39%	100%
		Ln(T) = 0.98Ln(X) - 0.98			Ln(T) = 0.96Ln(X) - 0.63		
		0.09	0.25	0.34	0.26	0.17	0.43
	Trips	18	52	70	54	35	89

The subject site is expected to generate 70 and 89 new two-way trips in the weekday AM and PM peak hour, respectively.

1.54 Peak Hour Trip Generation Rate:
159 two-way trips during peak hours for 207 residences

¹ <https://pub-kitchener.escribemeetings.com/filestream.ashx?DocumentId=22749>

² <https://pub-kitchener.escribemeetings.com/filestream.ashx?DocumentId=22750>

³ https://www.mississauga.ca/wp-content/uploads/2022/04/06115838/W8_2935_Traffic_Impact_Study_March2022.pdf

Biehn Drive Extension

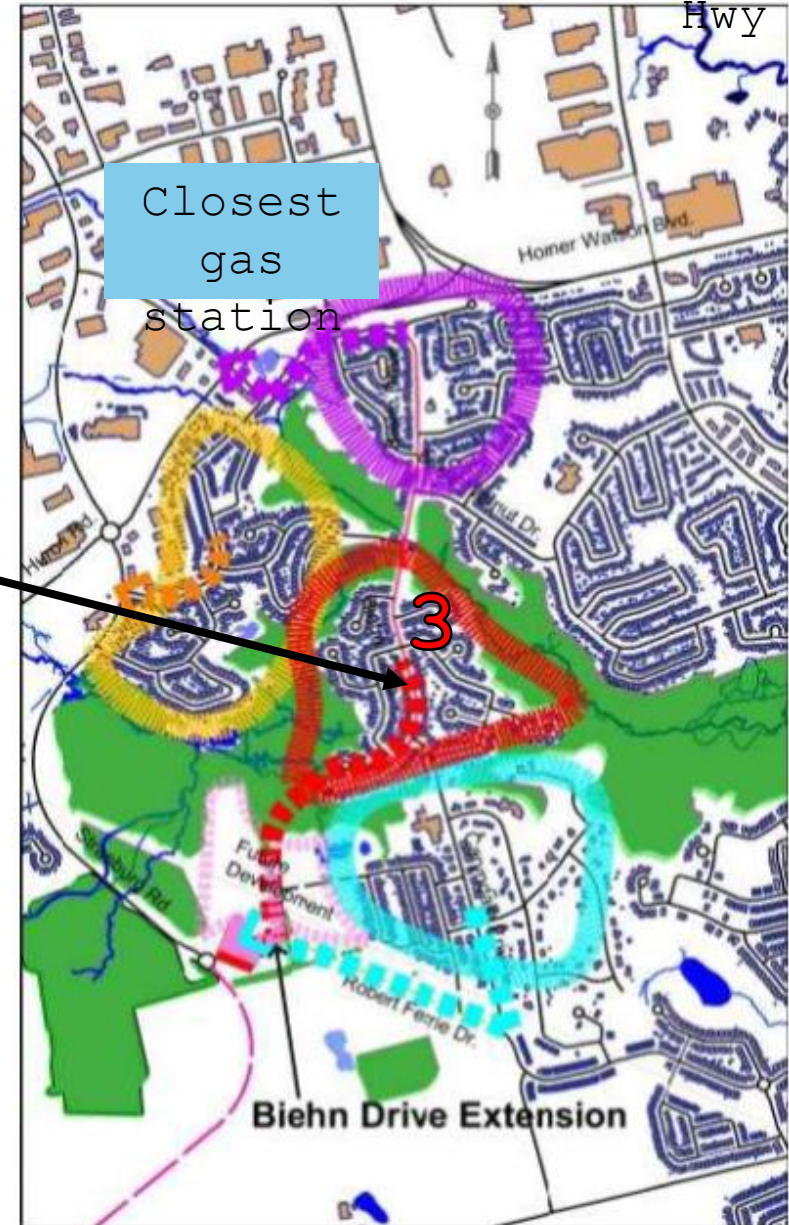
Table 3: BTE Trip Distribution and Assignment (2024)

Scenario	Origin / Destination Neighbourhood	Distribution		Number of Vehicle Trips
Scenario 1 – Extension of Biehn Drive (Location – Current Biehn Drive Terminus)	Neighbourhood 2 (Marl Meadow Neighbourhood)	Trips to/from the south via Robert Ferrie Drive	5%	224
	Neighbourhood 3 (Biehn Drive South Neighborhood)	Trips to/from the south Robert Ferrie Drive	90%	2,258
			Total=	2,482

Mississauga Proposed Residential Development

Table 5 – Site Trip Distribution

		North		
		31%		
West	18%		37%	East
		14%		
		South		



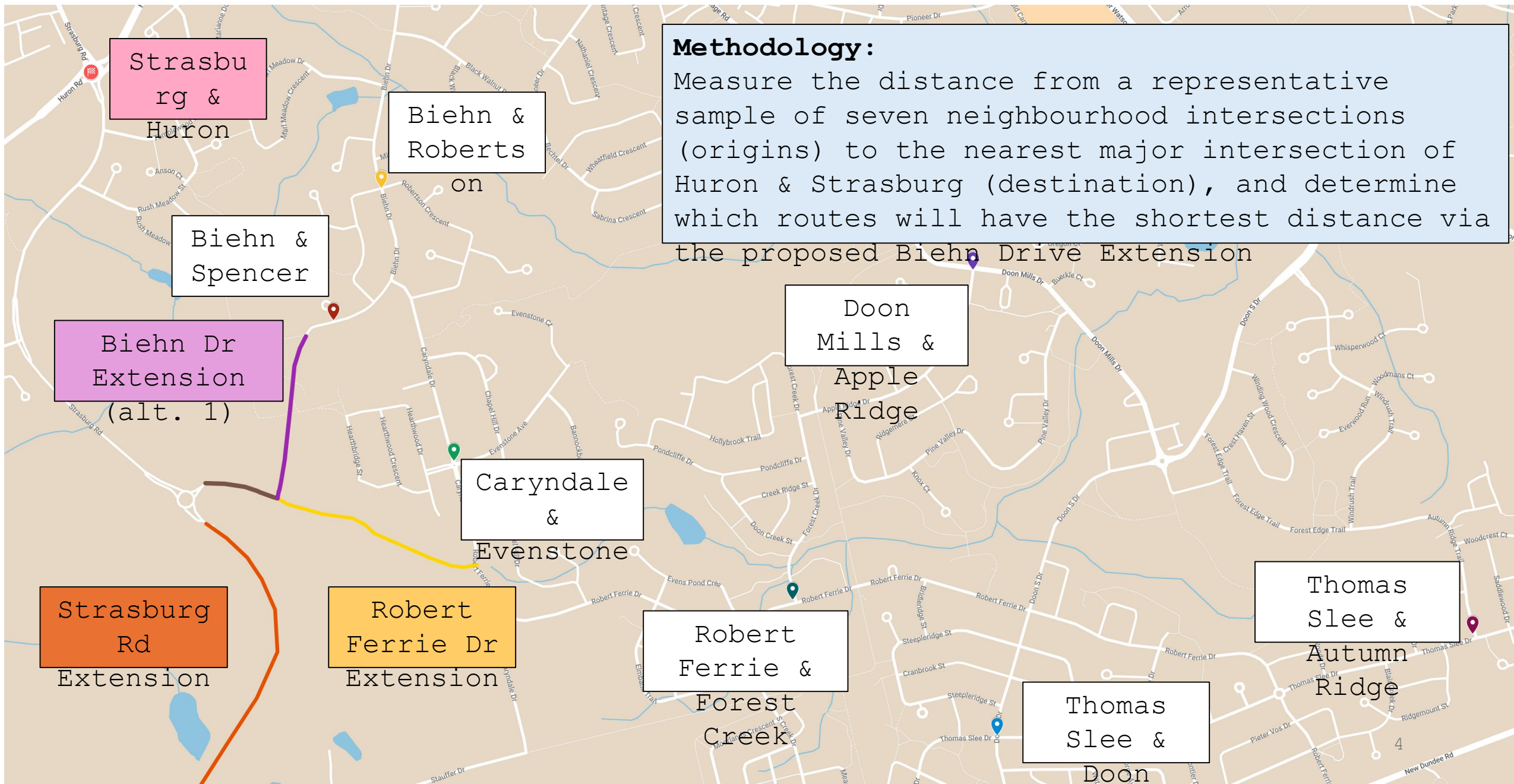
To Fairview & Hwy 8

Closest gas station

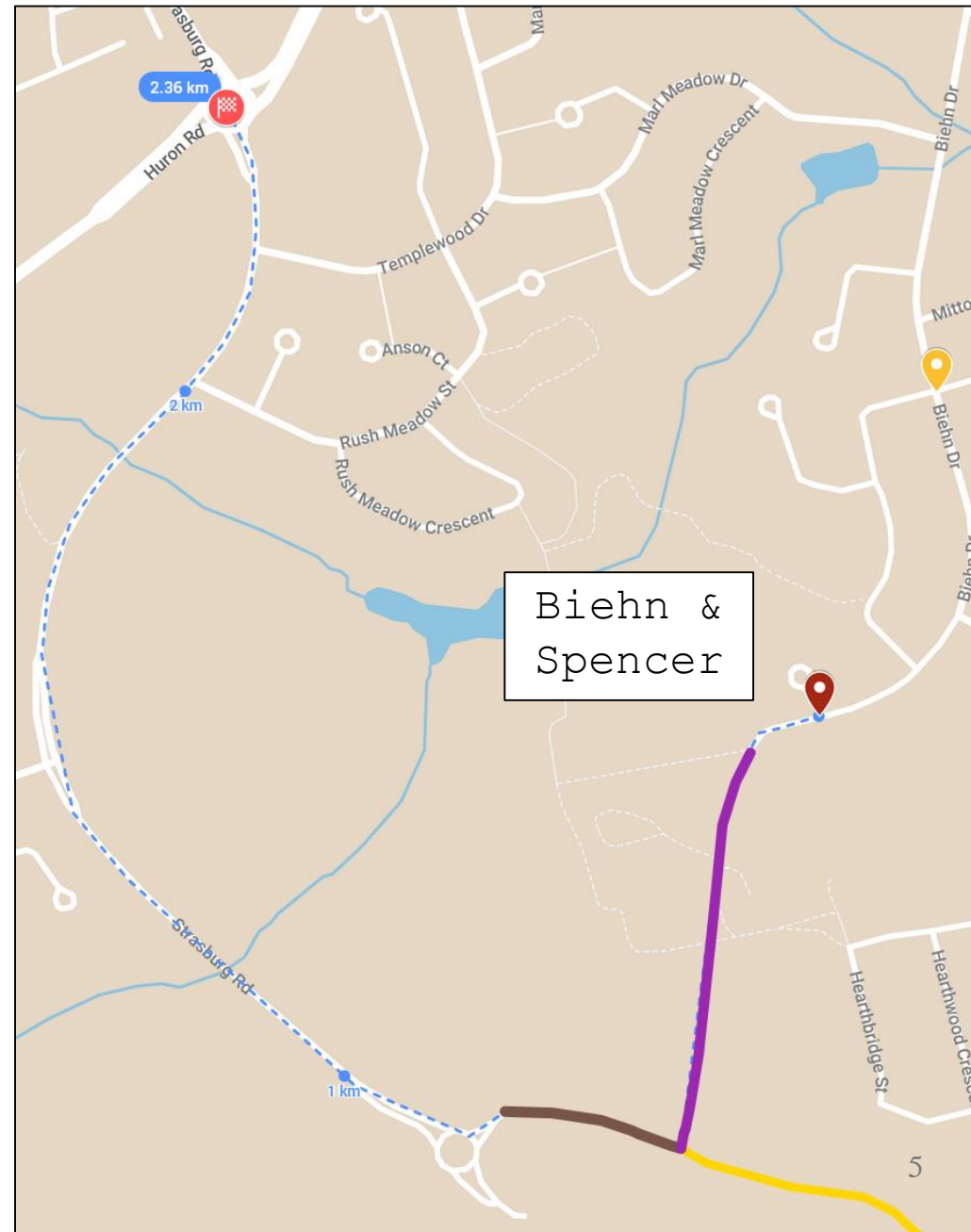
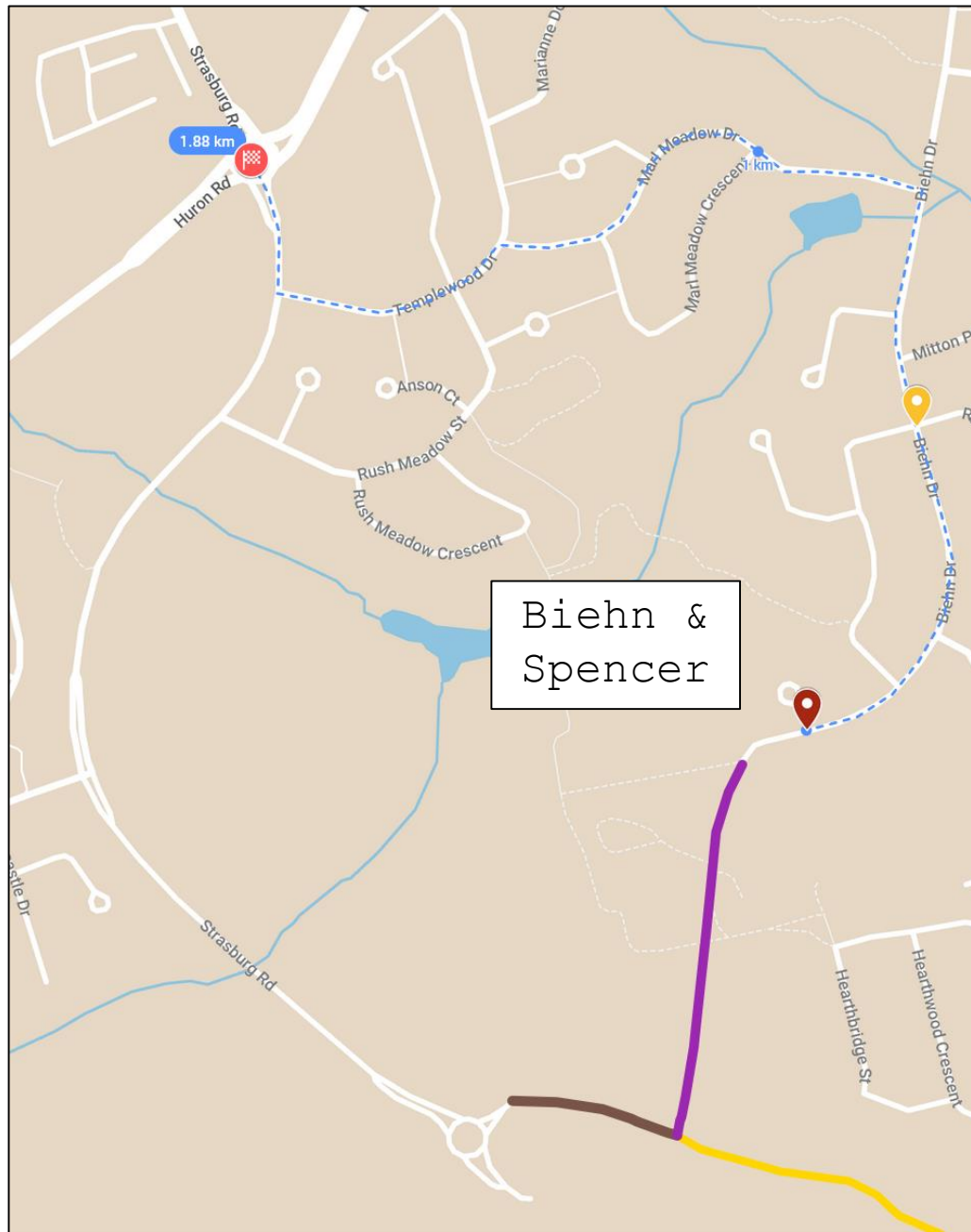
To 401

Closest grocery

Map of Representative Intersections and the Proposed Road Extensions



Measuring Distances from Representative Intersections to Huron & Strasburg



Distance from Origin Intersection to Huron & Strasburg (km)

Origin Intersection	Biehn Dr Extension ¹	Robert Ferrie Dr Extension ¹	Marl Meadow Dr ¹	Homer Watson / Old Huron ²
Biehn & Spencer	2.36	3.52	1.88	2.5
Biehn & Robertson	2.84	3.58	1.40	2.1
Caryndale & Evenstone	3.15	2.74	2.24	2.9
Robert Ferrie & Forest Creek	4.51	3.47	3.57	4.9
Doon Mills & Apple Ridge	5.79	4.75	4.89	3.6
Thomas Slee & Doon	6.88	5.83	5.97	5.3
Thomas Slee & Autumn Ridge	8.30	7.25	7.39	5.8

Analysis

The Biehn Dr Extension will not reduce the distance travelled to the closest major intersection for any residents, therefore its impact on alleviating traffic to this destination should be considered negligible

¹Distance measured using Google My Maps: https://www.google.com/maps/d/edit?mid=14_JvXEKiRmptMByS_1PvHzT7_UoQzkAA&usp=sharing

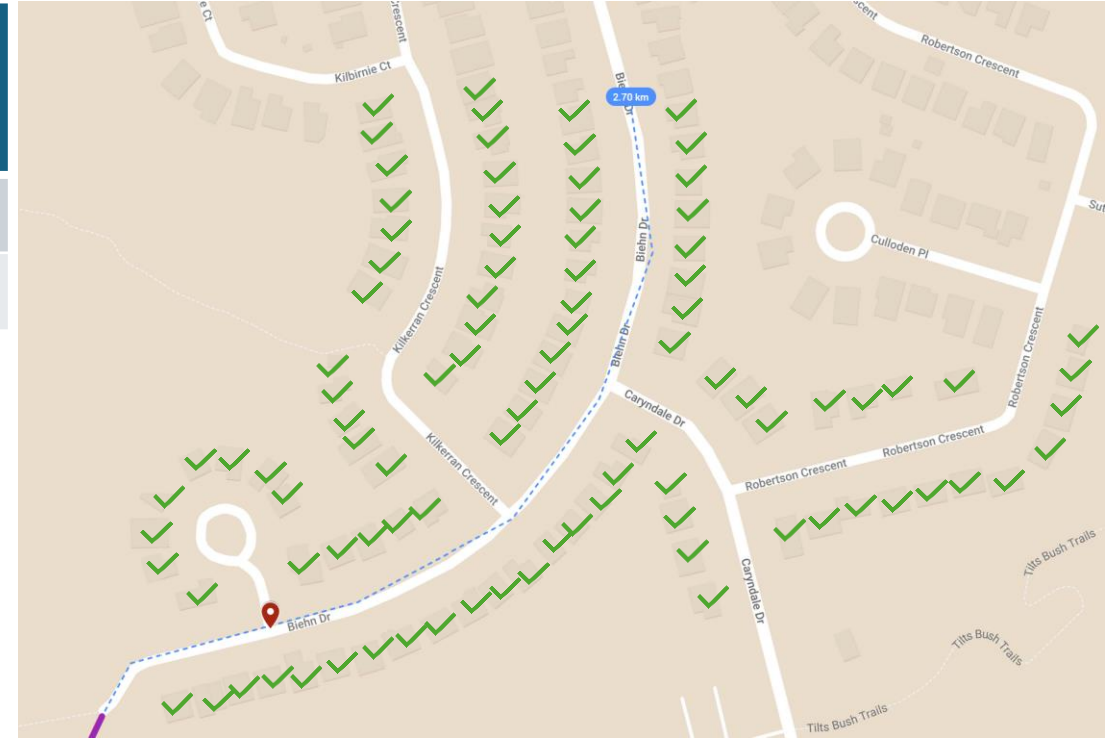
²Distance measured using Google My Maps: https://www.google.com/maps/d/edit?mid=14_JvXEKiRmptMByS_1PvHzT7_UoQzkAA&usp=sharing

Biehn & Spencer to Huron & Strasburg: Compensation for Traffic Speed

Route to Huron & Strasburg	Distance (km)	Estimated Avg. Speed (km/h)	Travel Time
Biehn Dr Extension	2.36	50	2:50
Marl Meadow Dr	1.88	35	3:14

Break-even distance on Biehn Dr Extension @ 50km/h to achieve a 3:14 travel time: **2.70km**

The **95** residences with a green checkmark are within this **2.70km** threshold



Analysis

If the Biehn Dr extension is completed, a total of **95 households** would experience reduced travel times to Huron & Strasburg of no greater than 24 seconds (~average of 12 seconds)

Payback Period

Assuming that:

- 1.) 4 vehicle trips/day per residence to Huron and Strasburg
- 2.) An average of 12 seconds is saved per trip
- 3.) The Value of Time (VoT) is \$22.24¹ in 2024² dollars

95 Residences * 4 vehicle trips/day per residence * 365 days/year = 138,700 trips per year

138,700 trips per year * 12 seconds saved per trip = 1,664,400 seconds saved per year

1,664,400 seconds saved / 3,600 seconds per hour = 462 hours saved per year

462 hours * \$22.24 = \$10,282 saved per year

Road construction costs³: \$7,493,640

Assuming an interest rate of zero, the payback period of this project is **~730 years.**

This calculation does not include cost of maintenance or other expenses.

¹ <https://assets.metrolinx.com/image/upload/v1661253822/Documents/Metrolinx/click-here-to-view-the-ontario-line-initial-business-case>

² <https://www.bankofcanada.ca/rates/related/inflation-calculator/>

³ https://www.kitchener.ca/en/resourcesGeneral/Documents/DSD_BUILD_Development_Charges_Background_Study.pdf

Conclusion

The following assertion was tested:

"The Biehn Drive Extension will act as a collector road... and help mitigate cut-through traffic on local streets within the community."¹

The empirical evidence from this study indicates that **the assertion is not supported**, and the Biehn Drive Extension would not fulfill its intended purpose, as it does not significantly shorten travel times. In addition, the payback period of ~730 years would indicate that the approval of the Biehn Drive Extension cannot be justified from a traffic alleviation or budgetary perspective.

