

Your comments are encouraged and appreciated, as this will provide us an opportunity to address project issues and concerns.





## STUDY PURPOSE / PROBLEM DEFINITION





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The study is being carried out to determine if a pedestrian bridge is warranted between Emma St. and Earl St. crossing the Speed River. If warranted, this study will determine which style of bridge will be built.

## PUBLIC INFORMATION CENTRE PURPOSE

### To get community feedback on:

- Existing conditions
- Community interests
- Alternative evaluation criteria and scoring

### This Public Information Centre (PIC) is designed to:

- Present information on existing conditions (natural, social, environment)
- •Discuss alternatives for the bridge and evaluation of alternatives
- Present study process and timelines

# **STUDY AREA**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

# The proposed location for the pedestrian bridge is shown below, from Emma St to Earl St crossing the Speed River



# MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT PROCESS



Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

#### CLASS EA PROCESS - SCHEDULE B

Many projects related to municipal systems are similar in nature, are carried out routinely, and have predictable and mitigatable environmental effects which are investigated according to the Municipal Engineers Association "Municipal Class Environmental Assessment" (October 2000, as amended in 2007, 2011 & 2015).

This study is being undertaken as a Schedule B project under the Municipal Class Environmental Assessment process.

The flow chart illustrates the key steps to be undertaken as part of the EA process.



## **Study History & Background**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

Studies have been conducted to identify the possible bridge connection for the study area.

#### **Trail Master Plan - 2005**

Identified the Emma to Earl Street connection as a future trail

## **Local Growth Management Strategy - 2007**

- City Council endorsed a 2031 population of 169,000 and an additional 31,000 jobs over the 25-year planning horizon within the area
- More bridge connections are needed to meet the increases in pedestrian / cycling traffic

### City Council resolution - July 20, 2015

 City Staff was directed to conduct an Environmental Assessment for a possible pedestrian bridge connecting Emma Street to Earl Street as a result of Speedvale Avenue Road Design limitations for pedestrians and cyclists.

In July 2016, Aquafor was retained by the City of Guelph to conduct a Municipal Class EA for the Emma St to Earl St Pedestrian Bridge.

# PUBLIC INPUT FROM PIC#1 (October 25th, 2016)





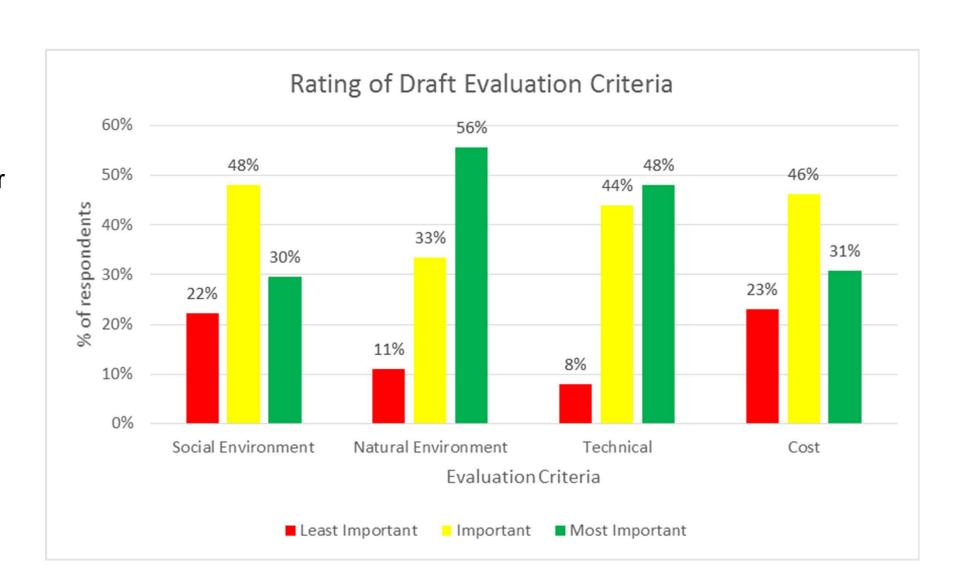
Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

## **Comments on Draft Problem/Opportunity Statement**

- The bridge should be described as being both a pedestrian and cycling bridge and the ultimate bridge design should account for this.
- Include recognition that the bridge should have the least impact on the natural environment, including the plant and animal communities in the area.
- Include recognition that the bridge will provide a car free route for cyclists and pedestrians traveling between downtown and the north-east corner of the city.

### **Draft Evaluation Criteria**

- Criteria were rated by the majority of participants as either important or most important, with the Natural Environment criteria rated as most important by 56% of respondents.
- Results of this question are provided in the adjacent graph.



## PUBLIC INPUT FROM PIC#1 (October 25th, 2016)



Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

#### **Issues and Concerns**

#### **Environmental Impacts**

- A new bridge in the proposed location contradicts policies in place to naturalize the river.
- Concern regarding impacts on wildlife and fisheries.

#### Impacts on the Adjacent Neighbourhood

 Greater consideration needs to be given to the negative impacts on the adjacent neighbourhood. It was noted that illegal activity currently takes place on the existing trail.

#### Impacts on the Adjacent Neighbourhood

Analysis for the bridge should be conducted to understand who the bridge users would be and where they
are travelling.

#### Proximity of the Bridge to the Armtec Property

- Any future bridge should be located such that truck movement across Earl St between the two Armtec properties can be maintained as a straight crossing.
- The bridge should be planned in coordination with the Guelph Hiking Trail Club which is working with Armtec on a side trail along the bank of the river on Armtec property.

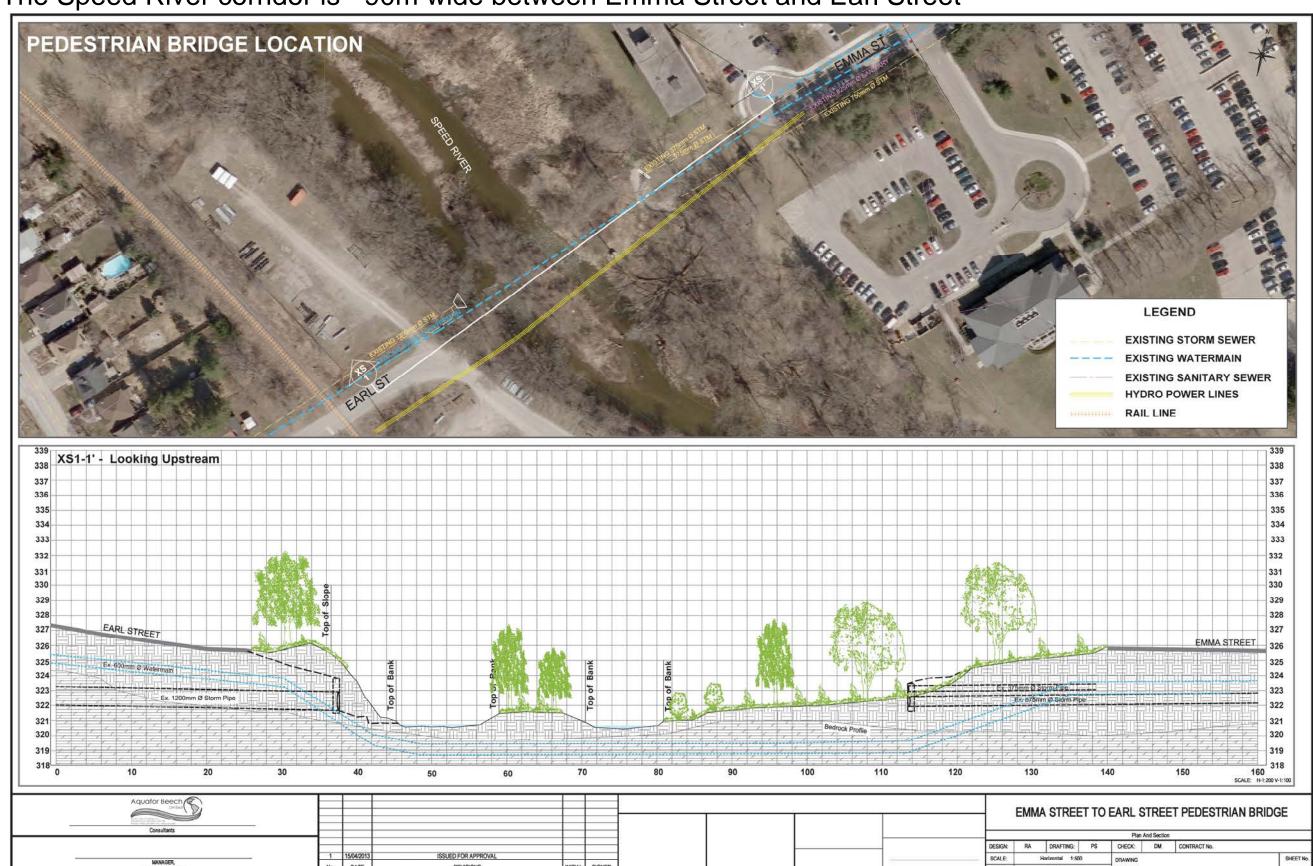
## **TOPOGRAPHY & UTILITIES**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The Speed River corridor is ~90m wide between Emma Street and Earl Street



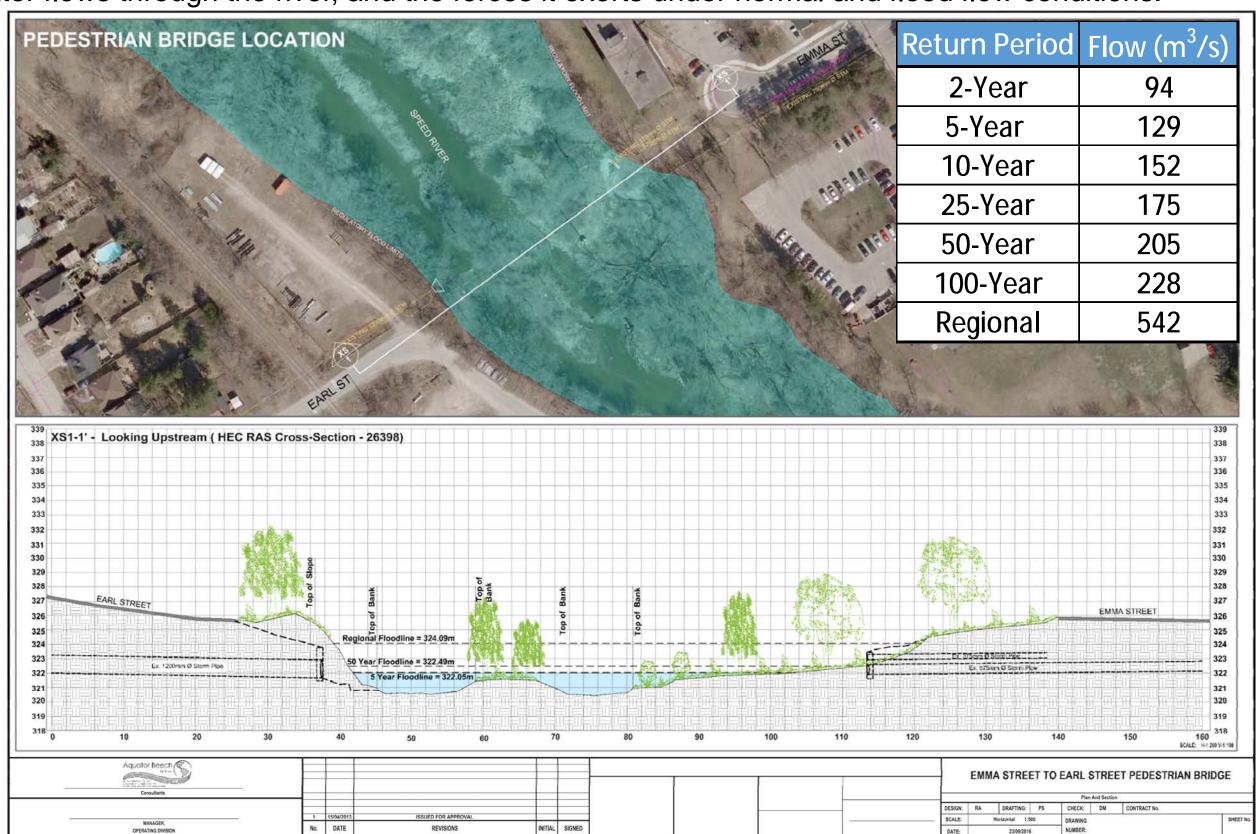
## **HYDROLOGY AND HYDRAULICS**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The study looked into existing hydrology and hydraulics of Speed River in order to understand how water flows through the river, and the forces it exerts under normal and flood flow conditions.



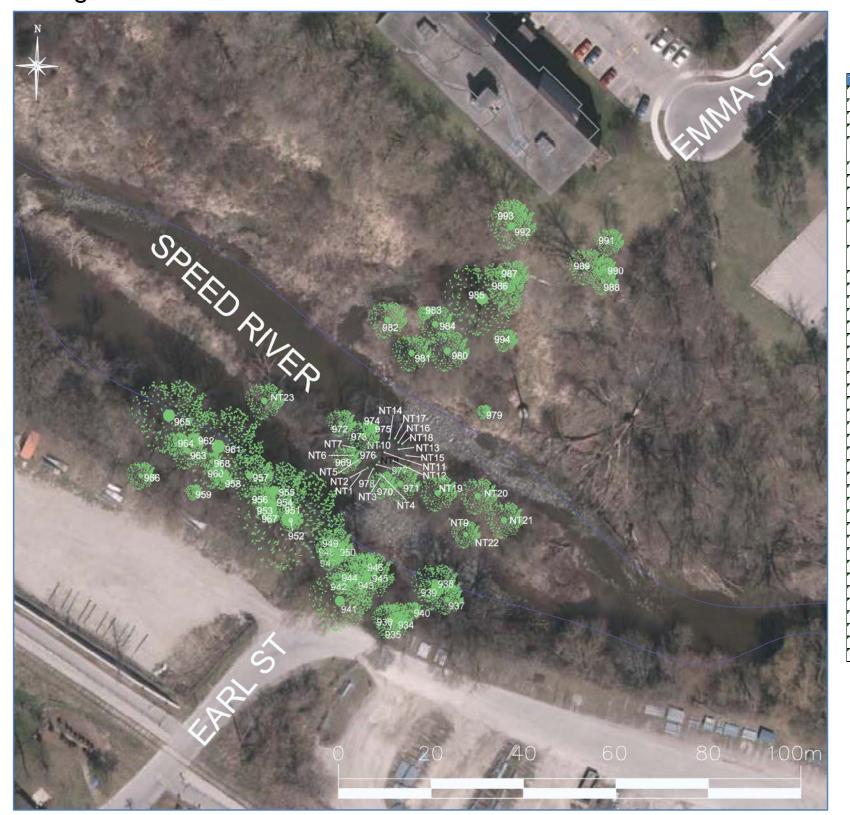
# TREE INVENTORIES





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

Trees greater than 10cm diameter were inventoried. Removal of trees will be required to accommodate bridge construction.



### Representative species include:

Tag#	Species Common Name	Species Botanical Name	DBH (cm)	Tag#	Species Common Name	Species Botanical Name	DBH (cm)
934	Small leaved Linden	Tilia cordata	17	976	Black Locust	Robinia pseudoacacia	23,9
935	Black Walnut	Juglans nigra	37	977	Black Locust	Robinia pseudoacacia	16
936	Siberian Elm	Ulmus pumila	56	978	Black Locust	Robinia pseudoacacia	14,8
937	Crack Willow	Salix fragilis	61	979	Manitoba Maple	Acer negundo	18
938	Crack Willow	Salix fragilis	68	980	Manitoba Maple	Acer negundo	[14,18,26, 19,10]
939	Manitoba Maple	Acer negundo	26	981	Crack Willow	Salix fragilis	46
940	Black Walnut	Juglans nigra	12	982	Black Walnut	Juglans nigra	31
941	Manitoba Maple	Acer negundo	26,23,16,2 6	983	Black Walnut	Juglans nigra	12
942	Manitoba Maple	Acer negundo	35	984	Black Walnut	Juglans nigra	[27,19]
943	Crack Willow	Salix fragilis	(32,40,38, 36)	985	Crack Willow	Salix fragilis	131
944	Manitoba Maple	Acer negundo	(16,21,17)	986	Manitoba Maple	Acer negundo	18,13,29, 23
945	Crack Willow	Salix fragilis	(41,39)	987	Black Walnut	Juglans nigra	22
946	Norway Maple	Acer platanoides	26	988	Manitoba Maple	Acer negundo	43
947	Manitoba Maple	Acer negundo	21	989	Manitoba Maple	Acer negundo	45,28
948	Norway Maple	Acer platanoides	19	990	Manitoba Maple	Acer negundo	19
949	Norway Maple	Acer platanoides	21	991	Black Locust	Robinia pseudoacacia	20,17,10
950	Crack Willow	Salix fragilis	58	992	Manitoba Maple	Acer negundo	23,26,30
951	Crack Willow	Salix fragilis	75,66	993	Manitoba Maple	Acer negundo	26
952	White Elm	Ulmus americana	21,29	994	White Elm	Ulmus americana	16
953	Manitoba Maple	Acer negundo	11,27	NT1	Black Locust	Robinia pseudoacacia	11
954	Manitoba Maple	Acer negundo	40	NT2	Black Locust	Robinia pseudoacacia	10
955	Crack Willow	Salix fragilis	80	NT3	Black Locust	Robinia pseudoacacia	11
956	White Elm	Ulmus americana	26	NT4	Black Locust	Robinia pseudoacacia	14
957	Crack Willow	Salix fragilis	62,(46,46)	NT5	Black Locust	Robinia pseudoacacia	13
958	Manitoba Maple	Acer negundo	34	NT6	Black Locust	Robinia pseudoacacia	14
959	Manitoba Maple	Acer negundo	16,10	NT7	Black Locust	Robinia pseudoacacia	17
960	Manitoba Maple	Acer negundo	18	NT8	Black Locust	Robinia pseudoacacia	14
961	Crack Willow	Salix fragilis	74	NT9	Black Locust	Robinia pseudoacacia	17,15
962	Manitoba Maple	Acer negundo	42	NT10	Black Locust	Robinia pseudoacacia	18,19,15
963	Manitoba Maple	Acer negundo	60	NT11	Black Locust	Robinia pseudoacacia	11
964	Manitoba Maple	Acer negundo	26	NT12	Black Locust	Robinia pseudoacacia	16,20
965	Crack Willow	Salix fragilis	72,71	NT13	Black Locust	Robinia pseudoacacia	14
966	Manitoba Maple	Acer negundo	28	NT14	Black Locust	Robinia pseudoacacia	18
967	White Elm	Ulmus americana	11	NT15	Black Locust	Robinia pseudoacacia	26
968	Manitoba Maple	Acer negundo	17	NT16	Black Locust	Robinia pseudoacacia	17
969	Black Walnut	Juglans nigra	11	NT17	White Elm	Ulmus americana	15
970	Black Walnut	Juglans nigra	16	NT18	Black Locust	Robinia pseudoacacia	19
971	Black Walnut	Juglans nigra	33	NT19	Black Walnut	Juglans nigra	n/a
972	Black Locust	Robinia pseudoacacia	30	NT20	Black Walnut	Juglans nigra	n/a
973	Black Walnut	Juglans nigra	26	NT21	Black Walnut	Juglans nigra	n/a
974	Black Locust	Robinia pseudoacacia	20	NT22	Black Walnut	Juglans nigra	n/a
975	Black Locust	Robinia pseudoacacia	15	NT23	Black Walnut	Juglans nigra	n/a

# FISHERIES & AQUATIC HABITAT





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The study defined the existing habitat conditions and fish species of the Speed River.

The Ministry of Natural Resources and Forestry has listed the Speed River as coolwater fish habitat. There are no fish collection records within the study area, but sampling at downstream stations has listed the following species present in the Speed River:









Common Carp was also observed during field investigations. These are warm to coolwater species, common in Ontario and fairly tolerant to disturbance within their habitats.

## NATURAL HERITAGE ASSESSMENT





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The Speed River corridor consists of a mix of woodland, wetland and aquatic communities. The corridor is part of the City of Guelph's Natural Heritage System, within which the City has identified several natural heritage features including:

- Significant woodlands;
- Significant wildlife habitat;
- Significant valleylands;
- Surface water and fisheries resources (cool water); and
- Locally significant wetlands.

Aquafor has confirmed and refined the limits of natural heritage features within the study area. These results will be presented to the City of Guelph and other applicable agencies (e.g. the GRCA) for review and comment.





## TERRESTRIAL NATURAL HERITAGE





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

Study Limits Confirmed Habitat For Snapping Turtle Groundwater Seepage **Ecological Land Classification Polygons** ELC Community Number: Community Type 1: CUW1 -Mineral Cultural Woodland 2: SWD4-1 - Willow Mineral Deciduous Swamp 3: SWD-Deciduous Swamp 4: FOD7-4 - Fresh-Moist Black walnut Lowland Deciduous Forest 5: SWT2-5 - Red-osier Mineral Thicket Swamp Type 6: CUW1 - Mineral Cultural Woodland 7: SWD4-1 - Willow Mineral Deciduous Swamp 8: SWT2 - Mineral Thicket Swamp 9: MAS2 (MAM2-9) - Mineral Shallow Marsh (inclusion Jewelweed Mineral Meadow Marsh) OAO - Open Water Aquation

Aquafor characterized the existing vegetation communities of the Speed River according to Ecological Land Classification protocols. Vegetation communities within the study area are illustrated in the adjacent map.

### **Significant Wildlife Habitat:**

- Confirmed habitat for snapping turtle (a Species-At-Risk) is also shown.
- Potential foraging and mating habitat for snapping turtle consists of the Speed River and vegetation units 2-5, 7-9.
- Suitable nesting habitat was not observed within the study area.

A groundwater seepage area is present in vegetation unit 9.

## WILDLIFE OBSERVATIONS





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The table below lists the wildlife encountered during field surveys, as well as observations by the public.

Species			Status				Vegetation Community									
Scientific Name	Common Name	COSEWIC	COSSARO	G-Rank	S-Rank	Guelph	1 2		3	4	5	6	7	8	9	River (OAO)
			Birds													
Corvus brachyrhynchos	American Crow			G5	S5 B								x			
Poecile atricapillus	Black-capped Chickadee			G5	S5		х					x				
Dumetella carolinensis	Gray Catbird			G5	S4 B								х			
Ardea herodias	Great Blue Heron			G5	S4	R								х		
Setophaga petechia	Yellow Warbler			G5	S5 B							x				
		M	amma	ıls		-	_									
Tamias striatus	Eastern Chipmunk			G5	S5		х					X				
Sylvilagus floridanus	Eastern Cottontail			G5	S5		х									
Sciurus carolinensis	Eastern Gray Squirrel			G5	S5							X				
Ondatra zibethicus	Muskrat			G5	S5					X				х		
Tamiasciurus Red Squirrel				G5	S5							X	x			
			Fish													
Cyprinus carpio Common Carp				G5	SNA											X
Herpetofauna																
Chelydra serpentina	SC	SC	G5	S3	R									x		
	Odonates and Lepidopterans															
N/A																

Snapping turtle and great blue heron were observed by local residents. However, no great blue heron nests were observed on or adjacent to the study area. The remaining species are common locally, provincially, and federally.

## **SPECIES AT RISK**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

Aquafor consulted a number of primary and secondary information sources to assess the presence of species at risk and species of conservation concern within the study area. The species and their likelihood of occurrence within the study area are detailed in the table below.

Sp	pecies	Significant in	Last Observed	Source	Likelihood of Occurrence in Study Area		
Scientific Name	Common Name	Guelph	Last Observed	Source			
Celithemis eponina	Halloween Pennant	*	1924/00/00	NHIC Database	Unlikely		
Carex careyana	Carey's Sedge	*	08/06/1905	NHIC Database	Not present		
Juglans cinerea	Butternut		-	MNRF	Not present		
Strophostyles helvola	Trailing Wild Bean	-	1924/09	NHIC Database	Not present		
Thamnophis sauritus	Eastern Ribbonsnake	*	25/04/1990	NHIC Database	Unlikely		
Graptemys geographica	Northern Map Turtle	*	1924/07/?	NHIC Database	Unlikely		
Emydoidea blandingii	Blanding's Turtle	*	-	Ontario Reptile and Amphibian Atlas	Unlikely		
Chelydra serpentina	Snapping Turtle	*	2015	Guelph resident	Present		
Ambystoma jeffersonianum	Jefferson / Blue-spotted Salamander Complex	*	-	Ontario Reptile and Amphibian Atlas	Not Present		
Pseudacris triseriata	Western Chorus Frog	*	-	Ontario Reptile and Amphibian Atlas	Unlikely		
Myotis lucifugus	Little Brown Myotis	-	-	Atlas of the Mammals of Ontario, MNRF			
Myotis leibii	Eastern Small-footed Bat	*	-	MNRF	Potentially Present		
Myotis septentrionalis	Northern Myotis	*	-	MNRF			
Ardea herodias	erodias Great Blue Heron * 2016 Guelph reside		Guelph resident	Present			
Rudbeckia laciniata	Cut-leaved Coneflower	*	2016	Aquafor Beech Limited	Present		
Elymus riparius	Riverbank wild-rye	*	2016	Aquafor Beech Limited	Present		







## **SOURCE WATER PROTECTION**

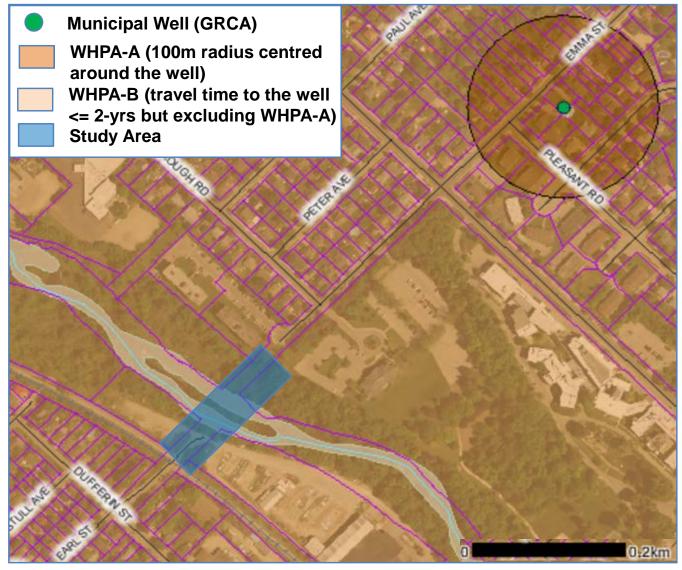




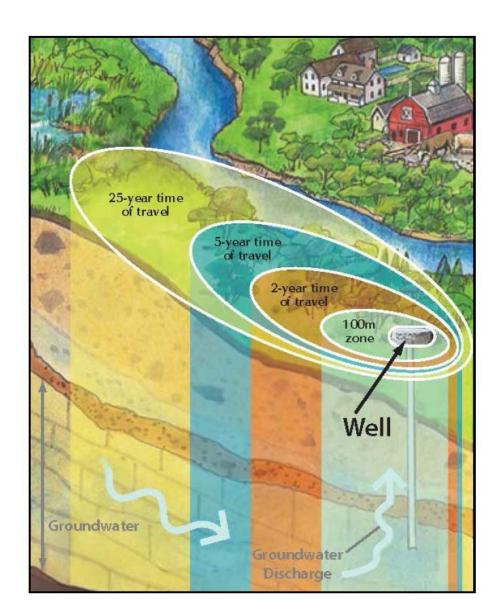
Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The Provincial Policy Statement (2014) contains policies that protect Ontario's natural heritage and water resources, including designated vulnerable areas mapped in source water protection assessment reports under the *Clean Water Act* (CWA).

The study area is defined as a Vulnerable Area for Groundwater, with a municipal well ~400m from study area.



Wellhead Protection Area (WHPA) (GRCA)



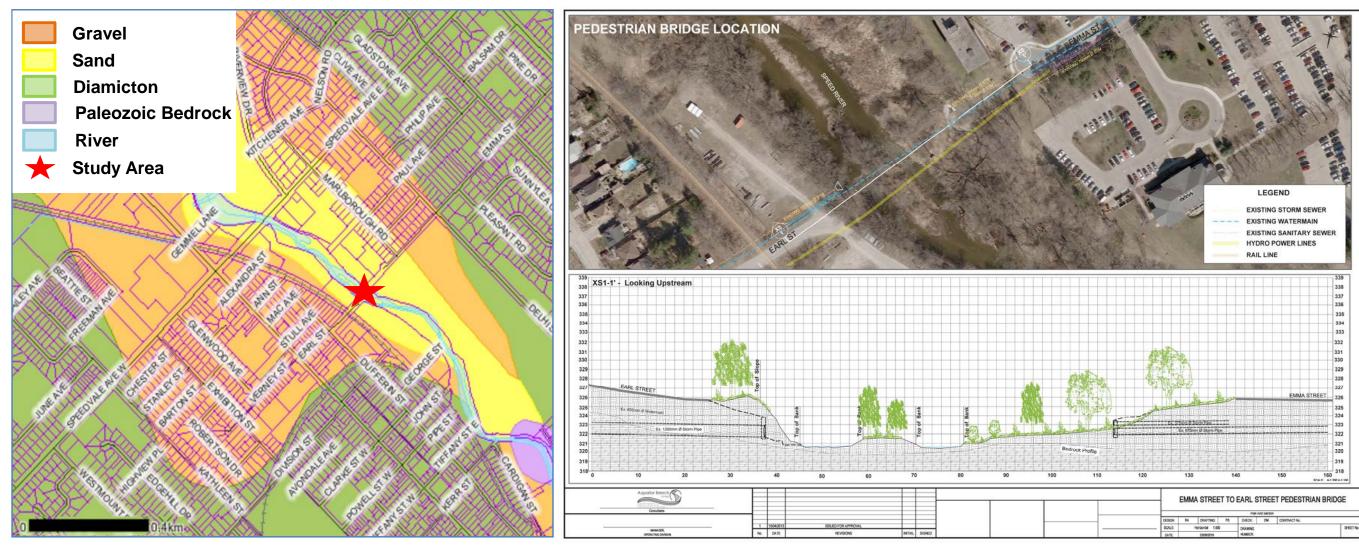
# **GEOLOGY**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The maps below illustrate the soil composition and bedrock elevation at the study area.



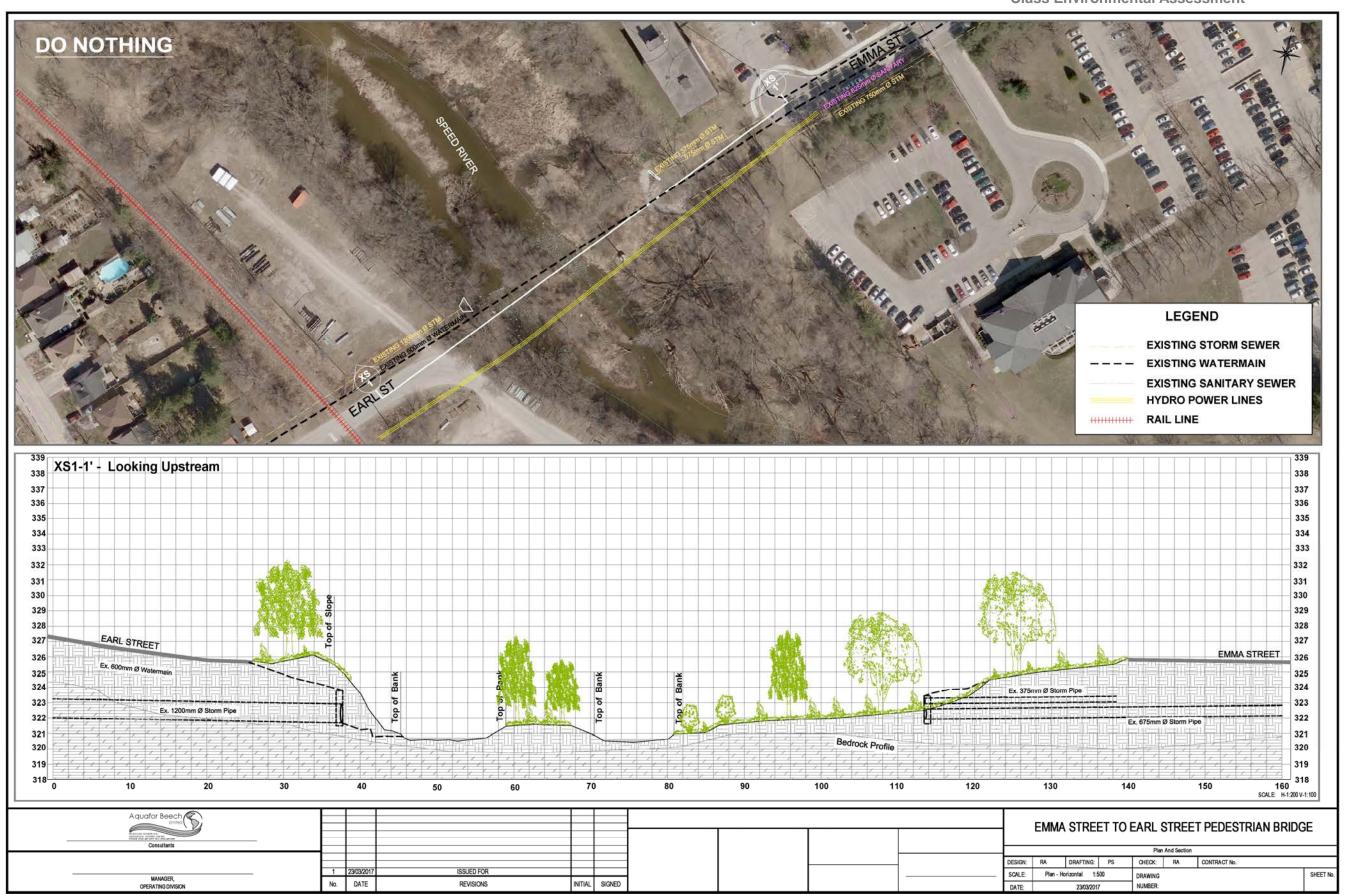
Surficial Geology Map (GRCA)

Bedrock Elevation	315 – 326.5 m	Source: MNDM and City of Guelph
Surficial Geology	Mainly Sand	Source: GRCA GRIN mapping tool

# **Assessment of Alternatives – Null Alternative / Do Nothing**



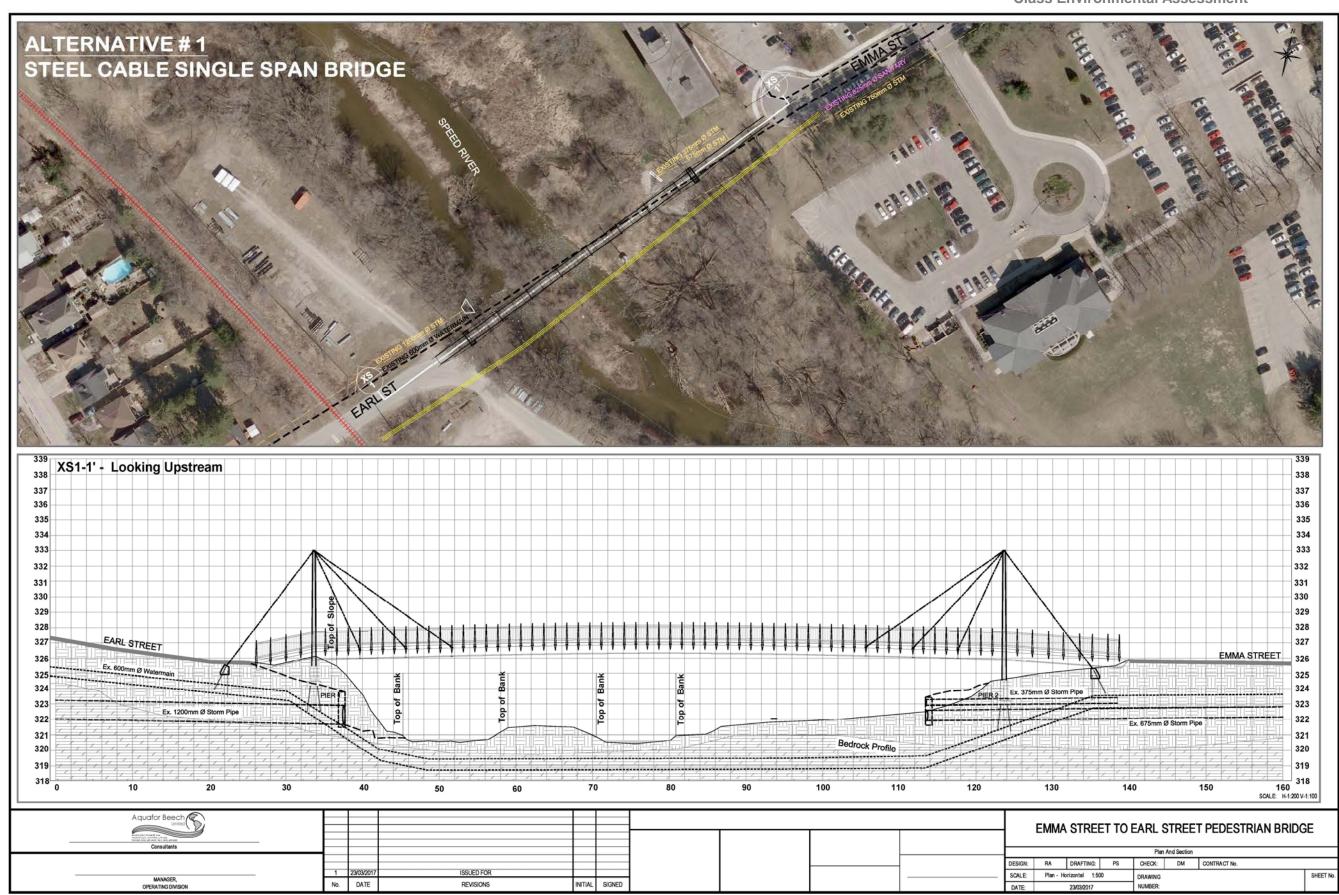




# ALTERNATIVE 1 – STEEL CABLE SINGLE SPAN BRIDGE



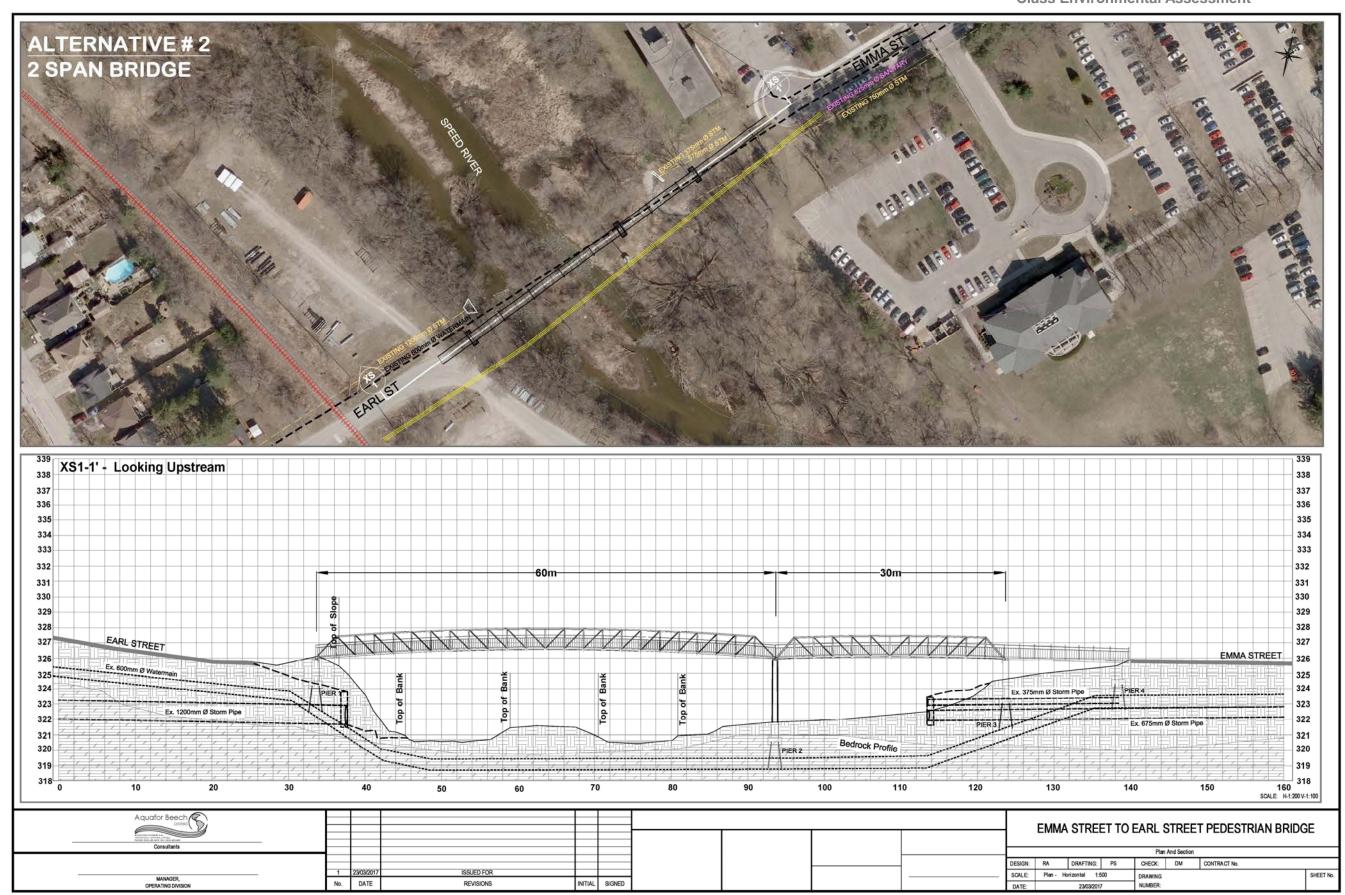




# ALTERNATIVE 2 – TWO-SPAN STEEL TRUSS BRIDGE



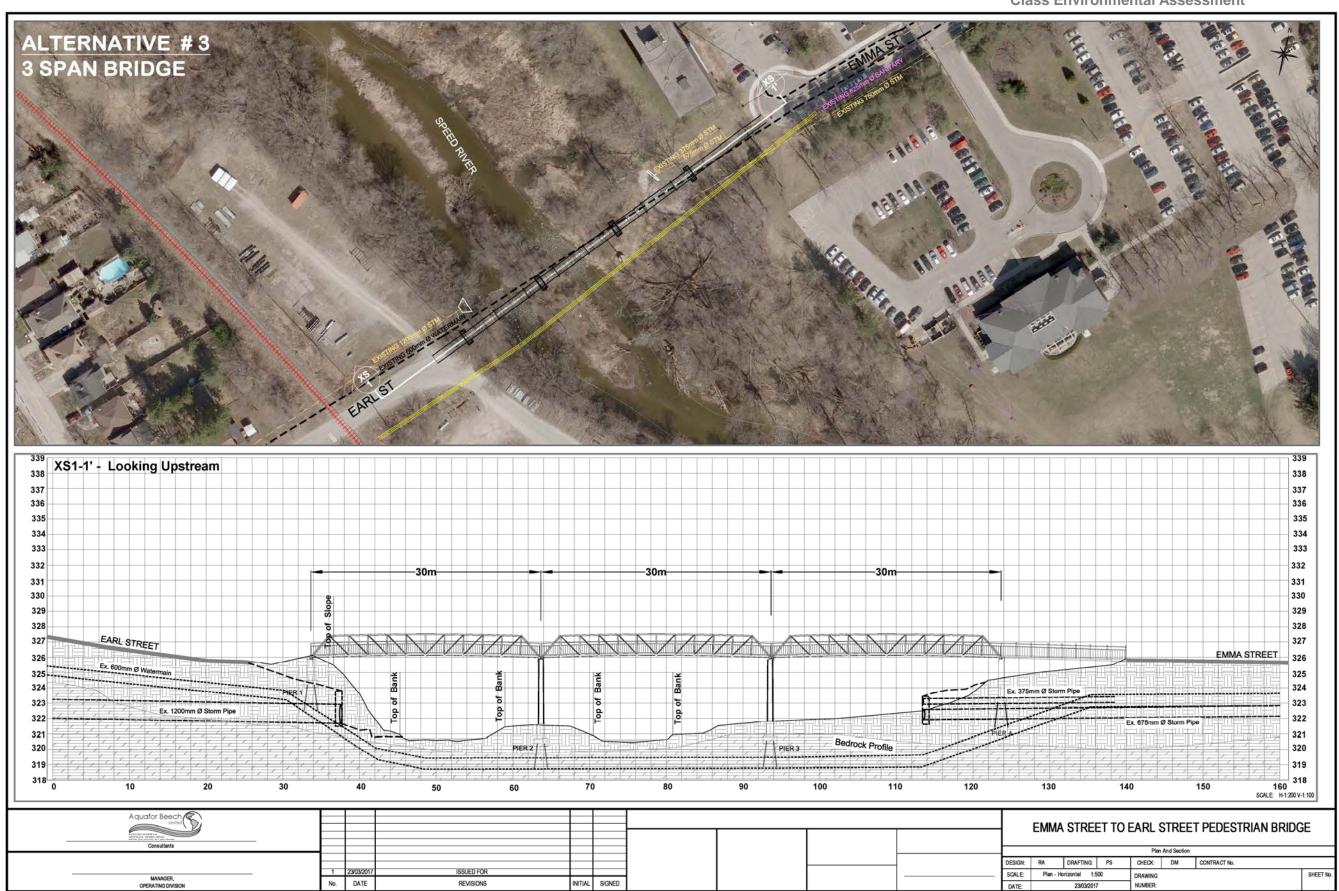




# ALTERNATIVE 3 – THREE-SPAN STEEL TRUSS BRIDGE







## **ALTERNATIVE EVALUATION CRITERIA**





Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

The following criteria are used to evaluate each alternative. It will help determine which alternative should be selected as the preliminary preferred alternative.

Comment sheets are provided to collect public feedback on the evaluation criteria and preliminary evaluation.

### **Physical & Natural Criteria**

- Hydraulics & Flooding
- Aquatic Habitat
- Terrestrial Habitat

#### **Technical Criteria**

- Impacts on existing infrastructure
- Lifespan of work

### **Social & Cultural Criteria**

- Public Safety
- Landowner Impacts
- Benefits to Community
- Cultural & Archaeological Impacts

## **Economic & Costing Criteria**

- Capital costs (engineering, land and construction)
- Annual operating and maintenance costs
- Life cycle cost

# PRELIMINARY ALTERNATIVE EVALUATION





		Null Alternative - Do Nothing			Steel Cable Suspension - Single Span	Alt	2 - Steel Box Truss - Double Span	Alt 3 - Steel Box Truss - Triple Span		
EV	ALUATION CRITERIA	Score	Explanation	Score Explanation		Score	Score Explanation		Explanation	
Phy	Physical and Natural Criteria			9		6		3		
Hydraulics & Flooding	Impact on conveyance of the Speed River	4	Existing hydraulic conveyance maintained	3	Miniimal impacts on hydraulic conveyance, only under extreme flood scenarios	2	Potential impact under extreme flood scenarios with single pier in floodplain	1	Most significant impact with two piers in floodplain / channel	
Aquatic Habitat	Impact on aquatic habitat	4	No impacts to warmwater fish species	3	Minimal impact on aquatic habitat	2	Some impact on aquatic habitat due to single pier construction.	1	Most significant impact on aquatic habitat due to two piers in channel	
Terrestrial Habitat Impact on connectivity, diversity and quantity/quality of habitat		4	No impacts to terrestrial habitat and vegetation	3	Removal of mature vegetation and habitat within bridge span			1	Most significant disturbance to terrestrial habitat during construction.	
Soc	cial and Cultural Criteria	4		13		11		10		
Public Safety	Impact on public safety	0	Crossing alternative at Speedvale puts users in close proximity to high speed vehicles	4	Alllows for separation between Speedvale traffic and recreational users	4	Alllows for separation between Speedvale traffic and recreational users	4	Alllows for separation between Speedvale traffic and recreational users	
Landowner Impacts	Impact on City of Guelph road right of way and adjacnet landowners	1	Council resolution for bridge consideration not implemented	2	Increased pedestrian & cyclist traffic to low volume Earl and Emma Streets. Sidewalks along Earl Street	2	Increased pedestrian & cyclist traffic to low volume Earl and Emma Streets. Sidewalks along Earl Street	2	Increased pedestrian & cyclist traffic to low volume Earl and Emma Streets. Sidewalks along Earl Street	
Benefit to Community	Access to trails, enjoyment of surrounding lands	0	Reduced opportunities for access to Downtown Trail	4	Connection to Downtown Trail, hospital, Bullfrog Park/Mall	4	Connection to Downtown Trail, hospital, Bullfrog Park/Mall	4	Connection to Downtown Trail, hospital, Bullfrog Park/Mall	
Cultural & Archaeological Impacts	Impact on areas of archaeological potential or built or cultural heritage resources	3	No impacts to existing heritage potential	3	Impacts associated with construction generally contained beyond top of bank	1	Disturbance to area of potential archaeolgoical significance	0	Most significant disturbance to area of potential archaeolgoical significance	
Techni	ical and Engineering Criteria	6		6		6		4		
Impact on Existing Infrastructure	Potential impacts on existing infrastrcture (watermain, storm sewer, hydro, roadway)	4	No impacts on existing infrastructure	3	Some interaction and conflict with existing infrastructure	3	Some interaction and conflict with existing infrastructure	2	Most interaction and conflict with existing infrastructure	
Lifespan of Works	Expected lifespan of alternative	2	No lifespan considerations	3	Bridge design for ~50 year timeframe	eframe 3 Bridge design for ~50 year		2	Minor reduction in lifespan due to interaction with river	
	Economic Criteria			1		5		5		
Capital Costs	One time cost to City	2	No capital costs, however, Speedvale Ave alteration may be required	0	Highest costs associated with single span suspension bridge	2	Moderate costs assoiccated with double span box truss	3	Lowest costs associated with three span box truss	
Operations & Maintenance Costs	Requirement for regular, irregular or no maintenance activities	2	No O&M costs, however, Speedvale Ave may be impacted	1	Most maintenance to confirm safety	3	Minimal maintenance, 3 year monitoring program	2	Some additional maintenance may be required due to two bridge piers	
	TOTAL SCORE	26		29		28		22		

Ranking Scale											
No / Negative Impact	0	1	2	3	4	Ideal / Most Positive Impact					

# PRELIMINARY ALTERNATIVE EVALUATION OVERVIEW



Emma St to Earl St Pedestrian Bridge Class Environmental Assessment

From a Natural Environment perspective, Alternative 1 - Steel Cable Single Span Bridge is the preferred alternative as it presents the least amount of impacts, with the exception of the null alternative. This alternative is considered to meet the spirit and intent of City of Guelph's Natural Heritage policy.

From an **Economic** perspective, Alternative 2 & 3 rank the highest, with the most significant costing associated with Alterative 1.

From a **Social and Cultural** perspective, Alternative 1 ranks the highest, followed by Alternative 2 and Alternative 3.

From a **Technical** perspective, the Null Alternative, along with Alternatives 1 & 2 rank the highest.

The preliminary ranking suggests Alternative 1 – Steel Cable Single Span Bridge as the preferred option.

Comment sheets are provided to collect public feedback on the preliminary evaluation and preferred alternative.

### **NEXT STEPS**

#### PUBLIC CONSULTATION - June, 2017

- Comment forms available for feedback.
- Compile and review feedback. Confirm alternative evaluation and the preferred alternative.

#### SUBMIT EA PROJECT FILE AND OBTAIN AGENCY APPROVALS - September, 2017

•Submit Project File Report to Ministry of Environment and Climate Change for 30 – day review.

#### **DETAILED DESIGN & IMPLEMENTATION**

•Construction timing dependant on City of Guelph' Capital Planning.

# TO PROVIDE COMMENT, OR TO BE ADDED TO THE STUDY STAKEHOLDER LIST, PLEASE CONTACT:

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# THANK YOU

FOR PARTICIPATING IN THE
EMMA STREET TO EARL STREET
PEDESTRIAN BRIDGE
CLASS ENVIRONMENTAL ASSESSMENT