MEETING AGENDA



MEETING River Systems Advisory Committee

DATE November 15, 2017

LOCATIONCity Hall Meeting Room BTIME4:00 pm - 6:00 pm

CHAIR Mariette Pushkar

AGENDA ITEMS

ITEM #	DESCRIPTION
1	 Welcome: Roll call and certification of quorum Introduction of members and city staff Declaration of pecuniary interest or conflict of interest
2	 Agenda 1. Niska Road Bridge Detailed Design a) Information from City staff and project team b) Hearing of Delegation(s) c) In Committee Discussion – Motion 2. Natural Heritage Action Plan – Project Update and Engagement Models
3	Adoption of Minutes – June 21, 2017 & September 13, 2017
4	Other Business & Next Meeting
5	Adjournment



November 15, 2015 River System Advisory Committee

Item Niska Rd Class EA

Report provides a status update regarding the project and shares new/updated information in relation to the design studies that are proceeding currently.

- **Proposal** The City of Guelph (City) initiated a Class Environmental Assessment (EA) study to investigate opportunities for improvements to Niska Road from the City limits to Downey Road. Segments of the roadway and the bridge over the Speed River are nearing the end of their operational life and require a solution to address their deterioration and increasing maintenance costs. The EA was completed earlier in 2017 following a decision from the MOE.
- **Location** The study area includes areas adjacent to Niska Rd from the City limit to the intersection of Niska at Downey Rd, including the crossing of the Speed River. The approximate extent of the Study Area is shown on the map included as Attachment 1. Based on the direction from Council and as reflected in the final EA improvements to the intersection at Downey and Niska are not included in the detail design.

Back ground

- The study area for the Niska Rd EA includes portions of the Hanlon Creek subwatershed, as well as the Speed River subwatershed.
 - There are also known natural heritage features and areas within the study area that are part of the City's Natural Heritage System (NHS) as identified within the Official Plan. A map of the known limits of the NHS for the area is included as Attachment 3. These features include:
 - Significant Woodlands;
 - Significant Wetlands (PSW);
 - Significant Valleylands (Speed River Valley);
 - Significant Wildlife Habitat (ecological linkages, deer winter congregation areas & waterfowl over wintering habitat);
 - Surface Water and Fish Habitat;
 - Wildlife Movement Corridors (associated with the ecological linkage)
 - Habitat for locally significant species
 - The City's Official Plan recognizes Niska Road as a two-lane collector road which collects vehicle trips from the area and provides for through movement for vehicular travel to/from arterial roadways and expressways. A secondary function is to serve land access and to link the Townships of Puslinch and Guelph-Eramosa.
 - The preferred solution from the EA includes:
 - The reconstruction of Niska Road from the City limits to the Downey Road intersection and provision of operational improvements to Niska Road
 - \circ $\,$ Replacement of the existing Bailey Bridge with a new two lane structure $\,$
 - RSAC's previous motions regarding the Niska EA are also attached for ease of reference (attachment 2).

ProjectAdditional fields studies were completed through 2017 to collect additional
information via an environmental addendum study to address gaps and
recommendations for additional field study through the detail design process as
recommended by the EA. Updated information (below and attached) is based on
the preliminary results of these studies and are being used to advance and
inform both the road and bridge design.

This project is being brought back to the committee now to provide a project update and collect some initial thoughts/feedback ahead of a community PIC in December. The full design and revised environmental reports will also be share early in the New Year for further input/ insight.

Geology, Hydrology and Hydrogeology

Between Ptarmigan Drive and Pioneer Trail, surficial geology is mapped as glaciofluvial deposits. Organic deposits and modern alluvium associated with the Speed River and adjacent wetlands are mapped from Pioneer Trail west towards the Niska Road bridge. Bedrock underlying the site is of the Guelph Formation.

Twelve (12) mini-piezometers were installed to monitor shallow groundwater levels. They have been installed in or near surface water bodies or wetlands to assess vertical gradients of groundwater flow. The following criteria were also considered in the location selection:

- At least one (1) monitoring location (well or piezometer) located on lands classified as agricultural and shallow marsh as identified in the Natural Heritage Strategy
- Two (2) single piezometers should be installed in the Speed River, one upstream and one downstream of the Niska Road crossing
- Some piezometers should be installed as nests, with a shallow and deep piezometer installed at a single location. This will allow for the accurate assessment of vertical hydraulic gradients, even if surface water is not present during a monitoring event.
- Piezometers should be installed on both sides (north and south) of the Niska Road Right of Way (ROW) to allow for an assessment of the hydraulic connection underneath Niska Road.
- Piezometers will generally target areas of suspected groundwater discharge. This will include areas near groundwater seeps observed by RJ Burnside.

Water monitoring commenced in the spring of 2017 and the last samples are being collected this month (November). Attachment 4 includes a map of the minipiezometer locations.

Sixteen (16) boreholes were also completed along Niska Rd from Ptarmigan west to the Speed River on May 10 and 11, 2017. Four (4) locations also included water monitoring wells (also shown in attachment 4). Soil and groundwater conditions were observed in the open boreholes throughout the drilling operations.

Preliminary findings:

- Support groundwater movement flowing generally in an east-west direction (generally parallel to the road).
- Confirmed presence of organics (peat) under Niska Rd at boreholes 17-3 & 4 (see attachment 3). Peat was found at a depth of approximately 1.4 m to 2.2 m below the ground surface
- Depth to groundwater becomes increasingly shallow west of Pioneer Trail

as topography drops to the west.

- Depth to water below the existing Niska Road west of Pioneer Trail is 1 to 2.7 m below existing grade. No groundwater was encountered in boreholes 17-10 to 17-16 during drilling.
- The highest recorded surface water elevation in the Speed River was measured at MP-01 on May 15, 2017 with an elevation of 298.4 meters above sea level (masl). This corresponds with several larger storms experienced in late April and early May.
- Groundwater elevations recorded from the mini-piezometers and monitoring wells during the unusually wet months of June, July and August exceed the surface water elevations recorded at the Speed River (consistent with groundwater flow towards the Speed River).
- Nested mini-piezometers MP-04D/S, MP-05D/S and MP-07D/S have consistently shown upward hydraulic gradients in the groundwater.
- The Speed River Wetland Complex receives some water from groundwater discharging into ephemeral and perennial pools or ponds along the base of topographic relief trending north-south immediately east of MP-04D/S, MP-05D/S, and MP-07D/S.

Water Quality Sampling

Water quality sampling has been conducted (spring and fall) at the crossing of Niska Road and the Speed River to support detailed design recommendations for location of a new Storm Water Management outlet.

Samples will also be used for characterizing preexisting conditions, for comparison post construction.

Terrestrial Ecology

Vegetation community and tree inventory updates

Updates to the vegetation (ELC) communities have also been looked at, while refinements to some of the community boundaries, the majority of boundaries and classifications remained consistent. Significant woodland boundaries have also been surveyed. The tree inventory has also been revised – however an update on anticipated removals will be provided in a future report for input, once the road design is further advanced as this will impact the number of anticipated removals. Decline of ash spp. within the road allowance may also increase the number of removals anticipated.

Bats

Following methods from the Guelph MNRF office, a review of candidate roost trees was completed (trees over 25 cm). All trees that have the potential to be maternity roost habitat were identified, as were the 10 "best" trees as required by MNRF bat maternity colony habitat surveys. Three (3) monitoring stations were established one on the North side and one on the South side of the road in the "best" candidate trees, and an additional detector was placed within the wetland on the North side of the road for bat activity comparison (see the map in attachment 6).

A total of 2,310 calls were recorded from Location 1 (in the wetland) compared to 769 at Location 2 (North side of Niska Road) and 884 at Location 3 (South side of Niska Road). Species at Risk (which include all Myotis species and Tricoloured Bat (Perimyotis subflavus), which typically have calls in the 40-45 kHz range) were detected on site. Species of bats with calls in the 16-35 kHz range were most common: primarily Big Brown Bat (Eptesicus fuscus) and

Silver-haired Bat (Lasionycterus noctivagans). To a lesser extent, Hoary Bat (Lasiurus cinereus) and Eastern Red Bat (Lasiurus borealis) were recorded.

Preliminary findings:

- None of the trees along the ROW appear to be being used as maternity roosts.
- There is foraging activity within the valleyland however the greatest concentration of activity is within wetland areas to the north.
- City team is having further discussions with MNRF staff regarding requirements, steps and timing windows

Birds

Updated bird surveys were also completed. Observations included 44 species, including several that were not previously identified through the EA. Of the birds recorded, two are Species at Risk: Barn Swallow (listed as Threatened Federally and Provincially) and Eastern Wood-pewee (listed as Special Concern Federally and Provincially).

Eleven species recorded are listed as locally rare in the City of Guelph: Great Blue Heron, Green Heron, Black-billed Cuckoo, Red-bellied Woodpecker, Hairy Woodpecker, Northern Flicker, Pileated Woodpecker, Eastern Wood-pewee, Barn Swallow, Brown Creeper, Baltimore Oriole. Four area sensitive birds were recorded, including: Hairy Woodpecker, Pileated Woodpecker, Red-breasted Nuthatch and Brown Creeper.

Preliminary findings:

- Work on breeding findings/analysis is still ongoing (will be in the updated EIS report)
- Vegetation removal and related works will need to be completed outside of bird breeding windows

Amphibians

Five frog species were recorded during amphibian call surveys and observed during wildlife movement surveys in 2017: Spring Peeper, American Toad, Gray Treefrog, Green Frog and Northern Leopard Frog.

Reptiles

Three species of reptiles were observed during field surveys in 2017: Snapping Turtle, DeKay's Brownsnake and Eastern Gartersnake. Snapping Turtle is listed as a Special Concern Federally and Provincially. Both Snapping Turtle and DeKay's Brownsnake are listed as locally significant species in Guelph.

Wildlife & Wildlife Movement

Wildlife movement surveys were completed in order to inform the numbers, sizing, and locations of wildlife crossings. Wildlife movement surveys were completed to target reptiles and amphibians, as they are highly vulnerable to road kill. However, all wildlife including other mammals (i.e. deer, raccoon) that were encountered in the ROW was documented.

Preliminary findings:

- There is species dispersal between habitats and are crossing Niska Rd
- Looking at up to three wildlife culverts from the River/new bridge abutments up to Pioneer Trail.
- Design for culverts will need to accommodate smaller species

(amphibians/reptiles) and incorporate funnel fencing and integration into the road bed with openings to provide sir circulation and ambient temperature.

- Construction mitigation being looked at in terms of timing windows, keeping wildlife out of construction areas and providing temporary crossings during construction.
- Signage for deer is also being looked at, as is reducing vehicle speeds (through traffic calming) to reduce risks of deer/car collisions.

Road Design

Road design is underway; a current draft version of the design is attached to this report. Improvements to Niska Road will include:

- 2 vehicular lanes, sidewalks & traffic calming measures
- A single multi-use path on the north side of Niska Rd from Ptarmigan to the Speed River to minimize the overall road footprint while providing connections out of the City and to the trails west of the Speed River.
- Raising the height of the roadway profile, particularly in the low-lying area on approach to the bridge on the east bank.
- Removal of organics and/or reinforcement of the road subgrade in areas where organics are present.
- Construction dewatering during road and storm drain excavation in the area from the Speed River up to approximately Pioneer Trail. Mitigation plans for dewatering are being prepared.
- The base of infrastructure (road base and storm drains) are likely to be within the depth range of the high seasonal water table. As road and storm drain alignment is generally parallel to groundwater flow this alignment should minimize the potential for intercepting groundwater long term.
- Road and storm drain design are going to incorporate measures to mitigate the potential for backfill materials to preferentially drain the shallow water table between Pioneer Trail and the Speed River.
- Stormwater treatment will include quantity control within the road profile as well as OGS for quality treatment.
- Retaining walls also being incorporated to minimize encroachment into adjacent natural features.
- Road design will incorporate up to 3 wildlife crossings; and side slope design will also need to accommodate funnel fencing.
- Wildlife signage to also be incorporated.

Bridge Design

Bridge design is also proceeding a general description of the bridge design along with a summary of the ongoing studies and preliminary results/constraints is provided below:

- The Bridge design will include:
 - A wider span of up to 40m the existing span is roughly 24m (between abutments)
 - New abutments that would support the new bridge
 - \circ $\;$ Raising the height of bridge profile so that the new deck is higher than the existing condition
 - Incorporating sidewalks/viewing areas on both sides of the bridge
 - Incorporating visual design elements based on input from the Heritage Impact Assessment (HIA)

- In terms of the HIA Heritage Guelph is involved in reviewing this report and providing input on the recommendations this will feed into both the discussions around abutments as well as the overall bridge design.
- The HIA notes the abutments are historically significant and as such should be preserved. From a cultural heritage perspective it is preferred to keep the abutments in situ for preservation. However the HIA also presents an alternative conservation approach to relocate, one, or both, abutments/wing walls elsewhere in the vicinity of the bridge as commemorative monuments.
- The existing abutments have been flagged in reports as being undermined and have a potential for failure.
- The existing abutments are confining the river and have supported the creation of pools above and below the bridge over time.
- The abutments are stable enough that if the Bailey Bridge is removed they are not expected to immediately fall into the river, however they will continue to be further undermined overtime and may still fail in the future.
- The existing crossing provides deficient freeboard and clearance compared to current Provincial Standards;
- The proposed bridge will still create significant backwater affect upstream due to changes in elevation and cross section. Removal of the existing abutments (to the riverbed) would assist in reducing or alleviating this condition and get it closer to meeting Provincial Standards. It would also assist in reducing/minimizing the increase in backwater/flood related impacts upstream.
- A storm outfall is also required in the vicinity of the abutments.
- Environmental considerations for the bridge design are largely focused on the impacts associated with retention/removal of the existing abutments, backwatering, channel confinement, fish habitat and river geomorphology.
- A geomorphologist has been retained to provide additional input on potential impacts/benefits to reducing channel confinement and in relation to the pool formations above and below the bridge – should the abutments need to be removed.
- **Comments** With respect to the information provided above, staff also offer the following comments:
 - 1. A SWM solution should be proposed that recognizes that the Speed River is a cold/cool water managed community. This should include additional water quality treatment beyond only oil/grit separators to support an enhanced level of water quality treatment prior to out letting to the river in order to address water quality impacts. This warrants further exploration through detail design, recognizing the tight space constraints due to the adjacent NHS.
 - 2. Invasive species management should be incorporated into the update removal plans as they are developed.
 - Compensation plantings (from vegetation removal) should be used to help minimize edge impacts and promote foraging habitat for key species including locally significant birds.
 - 4. At least 3 wildlife crossing structures should be integrated into the road design based on the road length and possible spacing of structures and following current road ecology guidelines.

- 5. Bridge and road construction plans should include/ identify staging areas and include provisions to minimize encroachments into riparian habitats and adjacent natural heritage features (sediment and erosion controls, tree protection fencing, landscaping and restoration plans, etc.) to the greatest extent possible and mitigate potential negative impacts.
- 6. The City should explore opportunities to improve or enhance fish habitat as part of a detailed mitigation plan in the event in water work is required for abutment removal. This should include opportunities for shoreline enhancement.

SuggestedStaff recommends that the River System Advisory Committee provideMotionthe following as it relates to the Niska Rd EA:

THAT the River System Advisory Committee support the following in relation to the preliminary alternative design options:

- Consideration of abutment removal subject to the protection and enhancement of fish habitat including shoreline stabilization and water quality improvements;
- A SWM strategy that incorporates additional SWM water quality measures beyond incorporation of OGS;
- Minimization of encroachment into the adjacent natural areas from the road and bridge footprints; and,
- Preparation of a wildlife construction protocol, dewatering plan, sediment and erosion control plan and a phasing/ staging plan;

THAT the River System Advisory Committee be provided an opportunity to review the environmental addendum and supporting reports and provide further input into the advancement of the detailed design phase of the Niska Rd project.

Attachment 1- Study Area Map



Attachment 2 – RSAC Motion Oct 8, 2015 Re: Niska Rd EA

Moved by Ian McCormick and seconded by Ryan VanEngen,

"That as part of the preparation of the Environmental Study Report, the EA documents, including the draft Natural Environment Report and Evaluation of Alternative Tables be revised to incorporate the following:

- Characterization and an impact assessment on the hydrological and groundwater functions of the river valley, including seepages and existing ditch flows and potential thermal impacts;
- That the implications both negative and positive of water and sediment runoff for each of the road alternatives on the adjacent natural areas be evaluated;
- Updates to appropriately incorporate the City's Natural Heritage System policies;
- Consideration of fragmentation impacts resulting from tree removal, as well as invasive species as it relates to Significant Woodlands and Wetlands;
- Clarification regarding the potential significance of the ELC Savannah Community including the presence of indicator species and any related available SRANK information;
- Consideration of impacts as it relates to the Monarch Butterfly and it's habitat;
- That impacts to ecological functions also be considered in relation to changes/impacts regarding flood elevations;
- Consideration of timing windows for breeding birds to avoid impacts to bird species and fisheries be included;
- A stormwater management approach that provides for an enhanced level of water quality treatment that is appropriate for the Speed River as a cold/cool water managed stream;
- An analysis regarding the need for more than one wildlife passage for reptiles and small mammals be provided;
- An analysis regarding large mammal/ vehicle strikes and the potential benefits of traffic calming/ speed reduction and increased or alternative methods for signage."

Motion Carried -Unanimous-

Moved by Nicola Lower and seconded by Jeremy Shute

"That the River System Advisory Committee support the following in relation to the preliminary alternative design options:

- A bridge design that respects the views from and of the bridge and provides for recreational access to the river (i.e. canoe launch). Including consideration for height restrictions.
- A cross section that provides for a balance that provides for pedestrian and cyclist access, and incorporates traffic calming measures to ensure safe access and address traffic volumes and provide for recreational use, while reducing the amount of encroachment into the natural heritage system to the greatest extent.
- A signalized intersection that avoids further encroachment natural heritage system.

And providing that the preferred options minimize the overall amount of encroachment into adjacent natural heritage features and provide opportunities for edge enhancement.

And that the protection of the viewscape be incorporated into a preferred road and bridge design."

Motion Carried -UnanimousMoved by Jeremy Shute and seconded by Ryan VanEngen

"That the River System Advisory Committee be provided an opportunity to participate in the detailed design phase of the Niska Rd project and,

That the following be incorporated into the project through the detailed design phase:

- A bat habitat assessment for the presence of maternity roosts;
- A detailed tree preservation and landscape and compensation plan including details regarding the management of invasive species to be completed as part of the project;
- An environmental management plan to include: wildlife construction protocol, dewatering plan, sediment and erosion control plan and a phasing/ staging plan, wildlife timing windows;
- At least one wildlife passage for reptiles and small mammals be provided within the roadway between Pioneer Trail and the Speed River. The wildlife passage design should be based on current road ecology science and design parameters;
- A review of alternative deer/wildlife movement signage options/designs and incorporation of wildlife signage into the detailed design."

Motion Carried -Unanimous-



Attachment 3 – Natural Heritage System

Attachment 4 – Locations of monitoring wells and minipiezometer locations



























Figure Title NISKA ROAD			
SAMPLE I	LINE CR	OSS-SECTIONS	S 0+020 TO 0+080
Drawn	Checked	Date	Figure No.
C.F.	A.V.	JULY 2017	
Scale		Project No.	⊢-01
HOR: 1:250 \	/ER: 1:50	-	

T:/Pete/City of Guelph/173704 Niska Road Design/NISKA - Plan & Profiles (2016), dwg Date Plotted: November 2, 2017 - 11:03 AM











Figure Title NISKA ROAD			
SAMPLE I	LINE CR	OSS-SECTIONS 0+	100 TO 0+160
Drawn	Checked	Date	Figure No.
C.F.	A.V.	JULY 2017	
Scale		Project No.	⊢-02
HOR: 1:250 \	/ER: 1:50	-	_

T:\Pete\City of Guelph\173704 Niska Road Design\NISKA - Plan & Profiles (2016).dwg Date Plotted: November 2, 2017 - 11:03 Alv











Figure Title			
SAMPLE LINE CR	OSS-SECTIONS 0+	180 TO 0+240	
Drawn Checked	Date	Figure No.	
C.F. A.V.	JULY 2017		
Scale	Project No.	⊢-03	
HOR: 1:250 VER: 1:50	-		
		· · · · · · · · · · · · · · · · · · ·	

T:/PetelCity of Guelph/173704 Niska Road Design/NISKA - Plan & Profiles (2016), dwg Date Plotted: November 2, 2017 - 11:04 AM









VERTICAL = 1 : 50

2m

1m

3m



ENGINEERING SERVICES

HORIZONTAL = 1 : 250

10m

5m

15m

0

Figure Title NISKA ROAD			
SAMPLE LINE CROSS-SECTIONS 0+260 TO 0+320			
Drawn	Checked	Date	Figure No.
C.F.	A.V.	JULY 2017	
Scale		Project No.	⊢-04
HOR: 1:250	VER: 1:50	-	

AM 11:27













T:/Pete/City of Guelph/173704 Niska Road Design/NISKA - Plan & Profiles (2016).dwg Date Plotted: November 2, 2017 - 11:05 AM









3m



ENGINEERING SERVICES



	NISKA ROAD		
SAMPLE LINE CROSS-SECTIONS 0+420 TO 0+480			
Drawn Checked	Date	Figure No.	
C.F. A.V.	JULY 2017		
Scale	Project No.	F-06	
HOR: 1:250 VER: 1:50	-		

T:/Pete/City of Guelph/173704 Niska Road Design/NISKA - Plan & Profiles (2016).dwg Date Plotted: November 2, 2017 - 11:05 AM











Figure Title NISKA ROAD			
SAMPLE	LINE CR	OSS-SECTIONS 0-	+500 TO 0+560
Drawn	Checked	Date	Figure No.
C.F.	A.V.	JULY 2017	
Scale		Project No.	F-0/
HOR: 1:250	VER: 1:50	-	

: T./Pete/City of Guelph/173704 Niska Road Design/NISKA - Plan & Profiles (2016) dwg Date Plotted: November 2, 2017 - 11:06 AM







3m

2m



ENGINEERING SERVICES

5m

10m

15m

0

1m

Figure Title NISKA ROAD				3704 Niska Ro
SAMPLE L	INE CR	OSS-SECTIONS 0+	580 TO 0+620	Guelph/173
Drawn	Checked	Date	Figure No.	ty of
C.F.	A.V.	JULY 2017		ete/Ci
Scale	=R· 1·50	Project No.	F-08	le: T:\Pe
11010.1.200 VI	-11. 1.00			i i i i i i i i i i i i i i i i i i i

: T:/PetelCity of Guelph/173704 Niska Road Design/NISKA - Plan & Profiles (2016) dwg Date Plotted: November 2, 2017 - 11:06 AM