

Reference No.	Description of Issue	Process to Address Coments		
		Mud Creek EA Process	Development Approvals Process	UTRCA Floodplain Regulation
	<i>Upper Thames River Conservation Authority</i>			
U-A1	In the Executive Summary (page IV) and in Section 1.8 - Problem Statement, the purpose and objectives place significant emphasis on the significance of the EA in addressing flooding along the Oxford Street Rapid Transit Corridor. While this is certainly important, we would suggest that the wording "... specifically to reduce the frequency of flooding of the proposed Oxford Street Rapid Transit Corridor" be revised to read " including reduction of the frequency of flooding ...".	X		
U-A2	We also suggest a possible re-wording of the third objective, perhaps reading " to protect natural heritage features and functions through retention where possible but where necessary, provide appropriate mitigation/compensation ..."	X		
U-A3	Page V - The first full paragraph should be corrected to read the Upper Thames River Conservation Authority.	X		
U-A4	Page VII - The last paragraph should read "... a cost estimate was developed that includes ..."	X		
U-A5	In Table ES-2 - Cost Analysis for Alternative 4 (and also in Table 6-5 on Page 6-18) we request clarification on the following a) Does 60,000 m2 represent the estimated total area to be cleared and grubbed of all vegetation? (The document separately indicates a figure of 4.5 hectares) and b) We are not sure whether a unit of measurement is needed under the Earthworks and Landscaping section for <i>Seeding</i> (is this a m2 area of measure?)	X		
U-A6	Under Section 2.2.1 Hydrology - The CH2M document relies heavily on work previously completed by Delcan and others. We remain concerned with the level of investigation and analysis completed for Area 2 - North of the CP rail line (page 2-2). This section of the report and subsequent sections indicate that flows are being directed to the east, the receiving land area is already susceptible to flooding from the Thames River. Directing flows from one catchment to another, if this is the case, is clearly not a preferable approach. This is also one of the areas we are still reviewing in the modelling work. Bottom line is that we need to have modelling work which accurately characterizes both existing and proposed conditions. The UTRCA is prepared to work with the City and the consultants as required to address this matter.			X
U-A7	4.1 - Technical Objectives and Targets - 7th bullet point. We would suggest wording such as "management of stormwater flows north of the CPR line and through the study area ".	X		

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U-A8	Section 4.2.1 Flooding - Subsection 4.2.1.6 Private Property (Page 4-4). We would suggest adding wording to the effect that the "...potential to reduce the frequency and extent of flooding on private property..." is considered.	X		
U-A9	Section 4.3 - Long List of Management Alternatives - This is an interesting title for a section in the report (and quite suitable given the legacy of past efforts)! We suggest it may be prudent to include another subsection in this chapter regarding the possible application of a two-zone flood plain management policy in accordance with the current City of London Official Plan and Conservation Authority/MNRF policies. This additional subsection could also reference the possible consideration of cut-fill balance in the flood plain, utilizing the modelling tools generated as part of the EA process.	X		X
U-A10	Subsection 4.3.13 (page 4-11) (and also applies to section 7.1.10 - page 7-9) - These sections of the report also deal with the area north of the CP rail line. Please refer to the concerns raised in number 6 above.			X
U-A11	Section 4- Development of Alternatives- Subsection 4.4.2 - Alternative 4 (page 4-15 and 4-16) The City of London and the UTRCA have received comments from stakeholders related to opportunities for cut and fill as well as the need to explore the feasibility of culvert upgrades on Proudfoot Lane (versus cleanout only) which may serve a number of positive benefits related to flow conveyance and access. We suggest that all opportunities to improve public access along road corridors currently susceptible to flooding should be pursued. For example, an upgraded Proudfoot lane culvert may be a viable component of a revised preferred alternative.	X		
U-A12	Table 5-1 Alternative Evaluation Criteria- Subject to further assessment and analysis of existing and proposed conditions upstream of the CP rail line as noted above, the UTRCA believes that the preferred alternative provides the best opportunities for addressing issues identified in the problem statement. OF course, virtually all components of the preferred alternative will be subject to UTRCA approval pursuant to Section 28 of the <i>Conservation Authorities Act</i> in addition to approvals from other environmental approval agencies having jurisdiction.	X - Detailed Design		X
U-A13	The precise diameter and depth of the proposed CN culvert installation will still be subject to comprehensive analysis. We question whether it is certain that the existing culvert should be fully decommissioned by grouting.	X - Detailed Design		X

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U-A14	Further to comment 12, any channel relocation will be subject to prior approval from the UTRCA and consultation with Fisheries and Oceans Canada (DFO) will be necessary to confirm their interest/concerns with this project component	X - Detailed Design		
U-A15	Also further to comment 12, with approximately 100,000 m ³ of surplus excavated fill being generated, the UTRCA through Section 28 review/approval process will have to verify the suitability of fill locations	X - Detailed Design		X
U-A16	There have been prior discussions regarding the need to understand the impacts of upstream channel improvements (culverts, flood plain channel capacity, etc.) on downstream properties and infrastructure. It is our understanding that modelling has been undertaken to assess these potential impacts but we anticipate that further investigation (i.e. modelling refinements) may be required to confirm conclusions made thus far. As noted previously, we continue to assess the modelling work and will provide additional commentary as soon as possible. We concur with the recommendation to undertake monitoring in conjunction with this issue.	X - Detailed Design		X
	<i>Upper Thames River Conservation Authority Comments on Mud Creek EIS and Subject Lands Status Report</i>			
U-B1	Please refer to our earlier suggestions regarding objectives (found in comment 2 for the CH2M main report)	X		
U-B2	1.2 Components of the 2016 Mud Creek EA Preferred Alternative-Not clear whether plans for a multi-purpose pathway along the 1050 mm trunk sanitary corridor were articulated in the main report by CH2M. Please address this component more fully.	X		
U-B3	The EIS makes reference to 4.5 hectares of trees potentially to be removed through the implementation of the preferred alternative. We suggest that a figure be added to the report to help clarify where the tree removal is likely to occur. On a related note, 320 trees are proposed to be planted as part of the re-naturalization strategy. Please try to better explain the ratio of trees lost vs trees planted (size, diameter, species diversity, etc.)	X		
U-B4	Section 1.4-Study Purpose- The UTRCA suggests that the purpose of the EIS goes beyond addressing the requirements of the City of London Official Plan, Chapter 15.3 and recommends that the wording be revised to indicate a broader interest.	X		

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	<i>Environmental and Ecological Planning Advisory Committee</i>			
	<i>General comments:</i>			
EEPAC-1	Some areas zoned for development (e.g., residential, north of Oxford Street) contain significant woodlands along the Mud Creek tributaries. These are also within the existing and future regulatory floodplains. New development should not be in these areas. Development plans should consider adequate buffer zones to protect woodland areas and incorporate LID opportunities in building design.		X	
EEPAC-2	Whenever possible, avoid cutting down trees during construction of culverts and renovation/relocation of Mud Creek by finding flexible ways to incorporate the trees' location into the design plan. Reducing negative impacts due to disturbance is key, and so retaining as much of the existing native vegetation is important, especially in preserving wildlife habitat and saving mature trees which take many years to grow. For example, when creating access roads, look for options to deviate to the side of mature trees rather than cutting it down and follow path of lower tree density. Another example would be to transplant native trees (small trees should be doable) to a nearby location within the corridor instead of cutting it down. A third example, where tree revetments are planned, is to leave original trees intact whenever possible, which will provide better bank stabilization. Fourthly, make all attempts to protect the vegetation communities on slopes, especially along both sides of the CNR tracks during construction of the culvert.	X - Detailed Design		
EEPAC-3	Ensure that the renovation and revitalization of Mud Creek improves corridor function and linking to Thames R. Compensation plan to replace the removal of woodland should be aimed at enhancing this corridor. In addition, in compensating trees 3:1 that the species of trees being replaced be appropriate to the environmental conditions of the location, and also to consider replacing the same type of vegetation communities (especially if it contains native and rare plants and promotes diversity) that were affected during construction.	X - Detailed Design		
EEPAC-4	Show a map that identifies areas of woodland and/or mature trees proposed for removal. This would visually clarify what vegetation communities are affected in the construction.	X		

Appendix "C" - EEPAC and UTRCA Comments

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EEPAC-5	Ensure that wildlife and nests are safely moved. Check for cavities, etc. Ensure adequate compensation, especially in removal of habitat known to contain SAR species - that these are replaced and/or moved according to protocol. Place bat boxes and other wildlife habitat installations before construction.	X		
EEPAC-6	EEPAC supports the monitoring plan proposed, and should include water quality measurements.	X - Detailed Design		
	Specific Comments regarding Mud Creek EA			
EEPAC-7	Maps showing the preferred Alternative 4 alignment of Mud Creek at the CNR crossing does not seem to reflect the proposed shift for the enlarged CNR culvert. Although the shift is small compared to the scale of the map, Alternative 4 planform is straight going into the CNR culvert (e.g., Figure 6-7), but the plan (Figure 7-1) creates more of a bend in the creek, and would cut through woodland. This difference is especially noted in Figure 6 map showing both the alternative and existing water courses overlapping. This may likely be a scale issue and/or difficulty in discerning flow in flooded area, but in general, need to ensure that details in design during the planning stages are consistent.	X		
EEPAC-8	Section 7.3.4 and touched on in 7.3.6 – The EA specifies that the size of the gravel used in the riffles of the designed channel should be determined using the shear stress of the hydrological modelling. Though I agree with this practical consideration, the design should also strongly consider the aquatic fauna likely to inhabit the new stream habitat (said in passing within 7.3.6). Many fishes require a specific type of gravel composition and the selection of gravel should consider the type of fish likely to inhabit the stream. Furthermore, the final design should avoid the use of relatively homogeneous gravel because most natural systems have a relatively heterogeneous gravel composition, which increases the potential habitat of macroinvertebrates and fish species capable of utilizing the habitat. Perhaps the gravel composition of relatively productive parts of the Mud Creek system can be used to provide a general idea of a biologically relevant gravel composition for the design stream sections. The EA could have better addressed these concerns in the section 7.3.6 given that information on fish and macroinvertebrates is available.	X		
EEPAC-9	The PCSWMM files for hydrological modelling were supposed to be in appendix K, but no such appendix was provided.	X		

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EEPAC-10	Page 45: Wording is confusing. What is meant by "upstream of Wonderland Road"?	X		
EEPAC-11	Page 59, section 4.2.2.2. begins with "All three woodlands" – the use of the word 'three' is confusing.	X		
EEPAC-12	Unsure of the exact location of the first two photos in Appendix I. Need some clarification or could use a map to show locations of the photos.	X		
	<i>Appendix B Subject Lands Status Report and Environmental Impact Study</i>			
EEPAC-13	Data for the stream fish assessment was used from previous studies on Mud Creek, but there are no details as to the methodology employed or the effort of the sampling. The consultants merely say they deem the data sufficient. This makes the stream fish assemblage section of the EIS difficult to evaluate and such a problem is evident in most EIS documents we see containing aquatic environments.	X		
EEPAC-14	Page 74 - Table 16 under Mitigation for Loss of Aquatic Habitat: I agree that the planned stream habitat improvements will provide enhanced water quality and habitat for stream fishes. However, the significant stream alterations that will occur between the Oxford Road and CN rail line will likely displace the fishes currently inhabiting the stream. Is there or will there be sufficient connectivity and fish upstream of the site to repopulate the altered stream sections? Furthermore, do the upstream sections of Mud Creek possess the diversity of fishes to maintain the biodiversity of the remediated stream section?	X		
EEPAC-15	Page 75 - Table 16 under Mitigation for Sedimentation: The listing of the warm water fish timing window is reversed (July 1 to March 31) making it appear as if the timing window is much larger. It dates should read: March 31 – July 1.	X		

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EEPAC-16	Page 77 under Terrestrial Habitat and Communities Construction Mitigation: There are contradictory statement being made when the consultants say "Re-vegetate and restore disturbed areas with native vegetation immediately after construction or for periods of inactivity. Use of native, non-invasive species and complementary vegetation in all open spaces created". They say that native species should be used when restoring disturbed areas, but then say non-natives can be used in open spaces created. This is a confusing switch because the restoration or modification of a natural area should not result in the introduction of a non-native species. Instead, it should be an opportunity to enhance native vegetation communities. I recommend the statement be altered to say that native species should be used in all replanting activities.	X		
EEPAC-17	For the adaptive monitoring plan, the consultants list several areas to monitor post construction. Though they acknowledge this is not an exhaustive list, I think an incredibly important aspect of the monitoring should be the recolonization and use of remediated/modified stream reaches by fish and benthic macroinvertebrate communities. The aquatic environment will be the major disturbed area and should be intensively monitored. Aquatic communities are often forgotten about in environmental impact studies and, especially, during post-construction monitoring studies. Also, strong post-construction monitoring of the stream will help provide the City of London with information for any future stream restoration efforts.	X		
EEPAC-18	Survey for migratory birds in spring and fall appear not to be conducted. This should be included in the surveys for May and September.	X		
	<i>Comments for benthic survey - Mud Creek EIS</i>			
EEPAC-19	The EMG requires a 'benthic survey', timing recommendation for 'wetland species' is summer (mid-July/early August). Are benthic invertebrates are considered 'wetland species' in the EMG? If so, the EIS 'benthic invertebrate collection' was completed in the fall on October 17, rather than in summer. Note there can be different assemblages of invertebrates at different times of year	X		
EEPAC-20	Were benthic survey stations chosen haphazardly?	X		

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EEPAC-21	Hilsenhoff recommends sampling at least 100 arthropods for the Biotic Index (likely to increase accuracy), but the calculation is a ratio and therefore having fewer than 100 arthropods does not make the index calculated for station 4 'invalid'.	X		
EEPAC-22	The Biotic Index values in the 1987 Hilsenhoff article (below) do not match this EIS. According to the table, station 2 is 'very poor' (BI=9.88), stations 1 and 3 are 'poor', and station 4 is 'fairly poor'. I'm not sure that this would change the conclusions, but should still be reported accurately.	X		