

MERTON TERTIARY PLANNING STUDY

TP113015 - 10

Town of Oakville Peer Reviews

1. Water/Wastewater	Amec Foster Wheeler
2. Stormwater Management	Amec Foster Wheeler
3. Natural Heritage System	Dougan & Associates/C.Portt and Associates
4. Hydrogeology	Amec Foster Wheeler
5. Stream Morphology	GHD
6. Transportation	CIMA
7. Archaeology	Amec Foster Wheeler
8. Noise	Amec Foster Wheeler
9. Odour	Amec Foster Wheeler
10. Geotechnical	Amec Foster Wheeler

RBS/cc

DRAFT

1. Water/Wastewater

AMEC FOSTER WHEELER – PEER REVIEW OF WATER AND WASTEWATER

Amec Foster Wheeler - Comment

DSEL – Response
Amec Foster Wheeler – Follow-Up Response

WATER

- i. Figure 10 is offset from the left. Due to the offset there is less room on the right leading to a smaller and cramped Legend. Recommend correcting offset and adjusting the size of the Legend to be consistent with Figures 11, 12 & 13.
- ii. Section 5.2 Water Design Factors, used for calculating demands, is still consistent with the Halton Design Criteria and not the Sustainable Halton Water and Wastewater Master Plan demand criteria utilized by the Genivar Report attached to the David Schaeffer Engineering Ltd. Report, and dated November 16, 2013. Water design criteria need to be updated to reflect Sustainable Halton Water and Wastewater Master Plan for consistency and the DSEL should be revised to reflect this.

Noted: This will be updated with the final report.

Amec Foster Wheeler – Acceptable

Noted. Since the design criteria is what is expected to eventually govern the design of the water distribution system, this was used in the report. The final report will reference the Sustainable Halton criteria, and will indicate that future designs must consider Regional design criteria. Furthermore, for the Bronte Green lands, this site specific study has already been provided in support of the draft plan application.

Amec Foster Wheeler – The report has been updated to reflect the Sustainable Halton Water and Wastewater Master Plan demand criteria.

Water Design Factors	Sustainable Halton Water and Wastewater Master Plan demand criteria
Average Daily Demand – Residential	314 L/person/day
Average Daily Demand – Employment	213 L/person/day
Maximum Daily Demand Peaking Factor	1.9 times average day
Peak Hour Demand Peaking Factor	3.0 times average day

- iii. Population Criteria provided in Section 5.2 (Water Design Criteria, page 12) was used to calculate population and capacity requirements for servicing options, as illustrated in Table 5-2: Land Use and Population for Servicing Options. The populations in Table 5-2 are inconsistent with the populations calculated in Appendix B (Demonstration Plan

Table 1, 2 and 3 of the Genivar report include the assumed population contributions to the wastewater system. Additional digital copies of the modeling files were included for review.

AMEC FOSTER WHEELER – PEER REVIEW OF WATER AND WASTEWATER

Amec Foster Wheeler - Comment		DSEL – Response Amec Foster Wheeler – Follow-Up Response														
<p>and Land Use Statistics). This inconsistency needs to be resolved. Due to the lack of a calculation spreadsheet provided with the updated Genivar Report, we are unable to comment on the consistency of Genivar’s population calculations with respect to the rest of the report. This needs to be included in the ASP.</p>		<p>Amec Foster Wheeler – We understand that Section 5 <u>Water Servicing</u>, illustrates different information than Appendix B (Demonstration Plan and Land Use Statistics). However, population criteria (i.e. persons/hectare; units/hectare; person/unit) should be consistent throughout the report over all disciplines.</p>														
<p>iv. Population Assumptions (unit yields) are still inconsistent on Tertiary Planning Study drawings and land use statistics in Appendix B (Demonstration Plan and Land Use Statistics). The table below provides a comparison of the assumptions. This inconsistency needs to be resolved in order to calculate demand.</p> <table border="1" data-bbox="205 771 1073 1169"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Population Assumptions (unit yields)</th> </tr> <tr> <th><i>Appendix B: Demonstration Plan Option A, B and C Drawings</i></th> <th><i>Appendix B: Demonstration Plan Calculation Sheet Assumptions</i></th> </tr> </thead> <tbody> <tr> <td>Low Density Residential</td> <td>29 upha</td> <td>Low Density Res – large singles 15 upha Low Density Res – small singles 22 upha</td> </tr> <tr> <td>Medium Density Residential</td> <td>30-50 upha</td> <td>Med Density Res – townhouses 35 upha</td> </tr> <tr> <td>High Density Residential</td> <td>51-185</td> <td>High Density Res – Mid-rise apt 84 upha</td> </tr> </tbody> </table>			Population Assumptions (unit yields)		<i>Appendix B: Demonstration Plan Option A, B and C Drawings</i>	<i>Appendix B: Demonstration Plan Calculation Sheet Assumptions</i>	Low Density Residential	29 upha	Low Density Res – large singles 15 upha Low Density Res – small singles 22 upha	Medium Density Residential	30-50 upha	Med Density Res – townhouses 35 upha	High Density Residential	51-185	High Density Res – Mid-rise apt 84 upha	<p>The inconsistencies related to population assumptions in Appendix ‘B’ are resultant from population ranges being included on the plans, and specific populations within the accompanying tables. The demand calculations in the water and wastewater models was based on the appropriate design criteria, and would eventually be refined with a more detailed land use plan at the site specific level. For the Bronte Green lands, this site specific study has already been provided in support of the draft plan application.</p> <p>Amec Foster Wheeler – we understand the assumptions were based on the accepted design criteria, however please clarify the reason for the discrepancy in the numbers in the report.</p>
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<p>v. Due to the lack of a calculation sheet provided with the updated Genivar Report we are unable to determine if the Population Assumptions (person / unit ratios) are now consistent in Appendix B (Demonstration Plan) and Genivar Report (Appendix A).</p>		<p>Population assumptions within the Genivar model was based on the accepted design criteria. Furthermore, the detailed model was provided for review by the Region and the peer review consultant.</p>														

AMEC FOSTER WHEELER – PEER REVIEW OF WATER AND WASTEWATER

Amec Foster Wheeler - Comment		DSEL – Response Amec Foster Wheeler – Follow-Up Response																	
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<p>vi. The Genivar Report used a person / unit ratio assumption in their original calculation sheet but the assumptions for the unit yield (upha) were not provided. This needs to be clarified in the updated calculation sheets.</p>		<p>Clarification on assumed upha will be provided in the final report.</p> <p>Amec Foster Wheeler – information has yet to be provided in the report.</p>																	
<p>vii. The original calculation sheets in the Genivar report did not include the areas (in hectares) contributing to each node. The calculation sheets should be revised to include this information.</p>		<p>The detailed digital model was included for review, which contains this data. Areas are summarized in Table 4-2 of the ASP.</p> <p>Amec Foster Wheeler – Table 4.2 contains the wastewater breakdown not the water. The InfoWater model only contains the demand not the population associated with it.</p>																	
WASTEWATER																			
<p>i. Comments iii, iv, v in Water Section in this memo also apply on wastewater servicing analysis in respect to consistent population calculation throughout the process.</p>		<p>Noted – see above</p>																	
<p>ii. Consistent residential population and employment numbers for the fully built-out Merton Plan Area should be summarized in the Wastewater Servicing section of the ASP.</p>		<p>Noted</p> <p>Amec Foster Wheeler – no summary exists in the latest report.</p>																	

AMEC FOSTER WHEELER – PEER REVIEW OF WATER AND WASTEWATER

Amec Foster Wheeler - Comment	DSEL – Response Amec Foster Wheeler – Follow-Up Response
<p>iii. Items ii, v and vi in previous AMEC comments (September, 2013) remain outstanding. The preliminary design of the proposed wastewater system shall be consistent with the Halton Region Guidelines. Plan and Profile Drawings including pipe size, length, slope, invert and connection points shall be included in the ASP.</p>	<p>As per the terms of reference, the expectation as the ASP level of study, proposed plan and profile drawings would be provided for the DC mains only. At this time, DC mains are not expected within the study area.</p> <p>Additionally the details requested from items ii, iv and vi have been addressed in the previous submission. A detailed network model was utilized to confirm the impact on the downstream system, and additional information regarding connection inverts was also provided on Figures 7, 8 and 9.</p> <p>Amec Foster Wheeler - acceptable</p>
<p>iv. It is not recommended to send a portion of wastewater flow to Oakville Southwest WWTP considering incidents of pipe surcharging in the models. Flow should be directed to the Mid-Halton WWTP.</p>	<p>Although it is recommended that all flows be directed to the Mid Halton WWTP, the proposed strategy within the ASP maximizes the use of existing infrastructure through gravity servicing. There are only relatively small areas directed to the Oakville SWWWTP. The surcharge condition noted is an existing condition, not created by the proposed servicing strategy. The final acceptance of proposed areas draining to Oakville SW WWTP could be determined based on site specific land uses as part of a future study.</p> <p>Amec Foster Wheeler – it is understood that the existing surcharge condition was not created by the proposed development, however, adding new flow to an already surcharged system is not recommended. Please confirm with the Region whether the strategy is acceptable.</p>
<p>v. In our discussions with the Region, we were advised that multiple connections to the 2400mm sewer trunk may not be</p>	<p>While it may be desirable to limit the connections to the existing 2400 mm trunk to a single connection, this would not</p>

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<p>permitted. Wastewater flow shall be collected locally and discharged to the 2400mm trunk via one connection point. Comment iv above and this comment shall be considered together.</p>	<p>be feasible considering the existing site constraints, such as the tributary SW-4. Grading constraints, and the phasing of land use within the study area would also make a single connection point impractical. It is, however, recognized that the desire is to reduce the number of connections to the maximum possible extent, and this would be a recommended consideration for future detailed studies. Furthermore, site specific studies for the Bronte Green lands have limited the connection points to the maximum possible extent.</p> <p><i>Amec Foster Wheeler – We accept the explanation, however, our understanding is the Region wishes to limit connection to the trunk sewer. Please provide documentation from the Region identifying the strategy as acceptable.</i></p>
<p>Same comment applies on the servicing connections at the northeast and southeast corners of the Merton Plan Area.</p>	<p>The northeast and southeast areas are directed to the system that is tributary to the Mid Halton WWTP.</p> <p><i>Amec Foster Wheeler – acceptable</i></p>

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2. Stormwater Management

January 26, 2015
Our File: TP113015-10



Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3

ATTENTION: Kirk Biggar, MSc.PI, RPF, MCIP, RPP
Senior Planner, Long Range Planning Section

Dear Sir,

**RE: Peer Review of Area Servicing Plan for Merton Tertiary Plan Area
(David Schaeffer Engineering Ltd., October 2014), Third Submission
Stormwater Management Component**

As requested, Amec Foster Wheeler Environment & Infrastructure has conducted a review of the stormwater management component of the third submission of the Area Servicing Plan for Merton Tertiary Plan Area (David Schaeffer Engineering Ltd., October 2014), as well as the responses provided in the Comments Response Matrix (updated) which accompanied the third submission. We have also reviewed the information presented in the Phase 2 Environmental Impact Study Merton (QEW/Bronte Road) Tertiary Planning Study (Beacon Environmental, October 2014) as well as the Hydrogeological Study (R.J. Burnside & Associates Limited, October 2014), wherever these documents have been referenced in the ASP and/or the response matrix, in order to verify whether the information and responses satisfactorily address the comments provided by the second submission (ref. Farrell/Scheckenberger-Biggan, January 24, 2014). The following has been prepared to summarize the findings of this review. For ease of reference, we have retained the original comments provided in our January 24, 2014 correspondence, and have added additional comments and response in *italics* font to note our findings of this review.

Content and Study Requirements

We have compared the report content with the requirements outlined in the approved Terms of Reference (TOR) (February 2013), in order to identify any information which remains outstanding. The following have been noted based upon our review:

- i) Section 7.1.2 a) ii) of the (TOR) specifies that the existing hydrologic conditions are to be characterized within the EIS. The combined information presented in

the Area Servicing Plan (ASP) and the Environmental Impact Study (EIS) partially addresses this requirement. Some key outstanding information includes the following:

- Simulated peak flows for existing land use conditions at key locations within and downstream of the Merton area within both the Fourteen Mile Creek Watershed and the Bronte Creek Watershed. [NOTE: Currently, simulated peak flows for existing land use conditions are provided in Appendix F of the ASP for the Fourteen Mile Creek outlet at the QEW.] **Comment not addressed:** *The hydrologic analyses provided in Appendix F of the ASP (ref. Pipkins-Maxwell, November 28, 2013) provides a comparison of simulated peak flows at the West Branch of Fourteen Mile Creek at the QEW, and does not include a comparison of peak flows at any other location within or downstream of the study area. The response provided in the response matrix notes that detailed analyses for the Bronte Creek watershed will be conducted at the site specific stage, however notes that this approach was discussed during meetings to review these comments. We are unaware of any agreement to defer these analyses to a later stage of study. Nevertheless, if the Town has accepted an alternative approach to address these comments, particularly if these analyses have been deferred to a later stage of study, then the meeting minutes should be appropriately referenced and included in the ASP, and Terms of Reference should be established to clearly outline the requirements of these analyses at a later stage of study. Otherwise, the peak flow comparison at the one location, as currently provided in the ASP, is considered insufficient to adequately address this comment/requirement. In particular, it should be demonstrated that post-to-pre development control would be maintained at all designated flood vulnerable areas and damage centres downstream of the study area, for all events up to and including the Regional Storm event.*
- Hydrologic characterization of the soils within the study area, comparing and contrasting the information presented in the surficial geology and surficial soils mapping; are the soil characteristics in the study area consistently characterized by each source? **Comment not addressed.** *The response provided in the response matrix notes that the ASP will reference Section 5.2 of the Hydrogeologic Study, which provides a characterization of the surficial geology; we have been unable find this cross-reference within the ASP, hence the comment remains outstanding. We further note that it would be preferable and appropriate for the water resources engineer to characterize the surficial geology as pertains to the surface water hydrology in the area (i.e. runoff volumes, infiltration rates, influence in peak flows), rather than deferring to the characterization provided by the hydrogeologist which pertains more toward the groundwater conditions in the area. Nevertheless, the characterization provided by R.J. Burnside & Associates is considered to adequately characterize the surficial geology, hence the*

inclusion of the cross-reference, as suggested in the response matrix, will adequately address this comment once the cross-reference is incorporated into the report.

- More discussion is required on the parameterization of the hydrologic models. What information was used to parameterize the land use and soils within the study area? What methodology was used to simulate the runoff response (i.e. SCS CN methodology, Green-Ampt method, etc.)? **Comment partially addressed.** *The response matrix provides additional information regarding the methodology used to parameterize the soils. This information should be incorporated into the ASP to ensure that the methodology applied for the assessment is clearly understood by all practitioners, agencies, and reviewers for the future Functional Studies. Furthermore, the information notes that the impervious coverages have been calculated by J.F. Sabourin & Associates based upon runoff coefficients provided by David Schaeffer Engineering Limited; additional information is thus required regarding the runoff coefficients assumed for each land use and the corresponding source of the values used.*
 - Existing floodline mapping. [NOTE: Floodline mapping is also required in accordance with Sections 7.1.3 i) and 7.1.4 iii) b) of the TOR.] **Comment partially addressed.** *The Regional Storm Floodplain has been shown on Figure 18 of the ASP. However, the floodplain does not extend along Watercourses 14W-W1, 14W-W1-1, 14W-W1-2, or 14W-W1-3. Furthermore, we have not located any supporting hydraulic analyses within the ASP for the floodline mapping, including updated hydraulic modelling based upon the more detailed topographic mapping provided for the study area. The outstanding information noted above is required in order to fully address this requirement.*
- ii) Section 7.1.2 b) vi) of the TOR specifies that the existing surface water quality is to be characterized. Although a discussion and general characterization of the surface water quality is provided in Section 4.2.5.5 of the EIS, additional information is required regarding the methods used for sampling, sampling locations, the duration and frequency of sampling, and statistical summaries of the results for the representative contaminants outlined, as per the requirements of the Terms of Reference. **Comment partially addressed.** *As noted in the response matrix, the surface water quality has been assessed and characterized as part of the hydrogeology study. While it would be preferable for the water resources engineer to characterize the surface water chemistry based upon the land use conditions within the study area, it would be acceptable for the ASP to include reference to the appropriate section of the hydrogeology study for the surface water quality characterization.*

- iii) Section 7.1.2 c) i) a) of the TOR specifies that it is to be confirmed whether or not impacts from development within the Bronte Creek catchment area may be accommodated by the existing drainage outlet. [NOTE: The stormwater management strategy advanced in the ASP recommends that runoff from the catchment west of Bronte Road which currently drains toward the Bronte Creek be diverted toward the Fourteen Mile Creek. Additional information is required within the ASP to justify this diversion strategy, in accordance with the Terms of Reference.] **Comment not addressed.** *The response matrix notes that a December 16, 2013 memorandum provides information which addresses this comment; we have been unable to locate this memorandum within either the ASP or the appendices. We note that the information provided in Appendix G of the ASP (ref. Pipkins-Maxwell, November 6, 2013) includes preliminary pond sizing for the development area within the Bronte Creek Watershed; DSEL should confirm whether the reference to the December 16, 2013 correspondence was incorrect, and whether the appropriate information is provided in the November 6, 2013 memorandum. Furthermore, and as noted previously, the responses provided in the response matrix state that detailed analyses for the area within the Bronte Creek Watershed are to be completed as part of future studies; meeting minutes documenting Town and Conservation Halton concurrence for deferring these analyses to future studies should be included in the ASP, as well as detailed scope and Terms of Reference for completing these analyses.*
- iv) Section 7.1.3 iv) of the TOR specifies that features-based water balance analysis be conducted. The features-based water balance is presented in Section 4.2.8 of the EIS for the watercourse features; have any terrestrial features been identified for which a water balance should be completed (i.e. slough forests, wet woodlots, wetlands, etc.)? The features-based water balance presented in Section 4.2.8 of the EIS provides a summary of the surface water component of the water balance to the watercourse features, however groundwater recharge/discharge and evapotranspiration should be included in the water balance assessment. While it is suggested in the EIS that the PCSWMM model does not account for groundwater conditions, we note that groundwater recharge may be determined using the “aquifer” routines in PCSWMM, or else may be estimated based upon the simulated infiltration which is a direct output for each subcatchment in PCSWMM. **Comment addressed.** *Water balance for the watercourse features is included in the hydrogeology study. While it would be preferable for the ASP to include appropriate references and discussions of this information, this comment has been adequately addressed by the analyses and information presented by other contributors to the overall study process.*
- v) Section 7.1.4 vi) d. of the TOR lists various water quality improvements to be considered to enhance the natural heritage features and functions within the Study Area. While the ASP acknowledges that low impact development (LID)

measures may be implemented, the TOR specifies that opportunities to remove online ponds, restore in-stream cover, and direct treated urban storm runoff to the system (where beneficial) be investigated. These other opportunities are not discussed in the ASP and require consideration and evaluation. **Comment addressed.** *As noted in the response matrix, discussion of other opportunities to improve surface water quality through the removal of online ponds and restoration of in-stream cover are provided in the EIS. While it would be preferable for the ASP to include appropriate references and discussions of this information, this comment has been adequately addressed by the analyses and information presented by other contributors to the overall study process.*

vi) Section 7.1.6 of the TOR specifies various requirements for the impact assessment. Key outstanding information requirements include the following:

- Item v) specifies that an erosion assessment be completed for the study area and “further downstream to a point where the catchment is a relatively small contribution to the greater system”. The erosion assessment provided in Appendix H of the ASP considered erosion sites within the limits of the Merton study area, but did not include analysis further downstream. Additional information is required in this regard as to how the approach advanced is compliant with the TOR. **Comment partially addressed.** *The comments provided in the response matrix note that the Merton study area represents 10% of the contributing drainage area to the point of comparison within the Fourteen Mile Creek Watershed. The required analyses within the Bronte Creek Watershed have not been completed, but rather have been deferred to future studies. As noted in earlier comments, the ASP should include documentation of Town support for deferring this study as well as Terms of Reference for the analysis prior to completing the detailed design.*
- Item vi) specifies that downstream capacity constraints be identified. Section 6.5 of the ASP (page 40) states that it has been assumed that the downstream system is capable of accepting the pre-development Regional Storm peak flow rate of 4.147 m³/s, and recommends that a detailed assessment be completed as the detailed design of the Bronte Creek catchment advances. The ASP should clearly note the basis of this assessment, citing supporting background information as appropriate, or else include some preliminary analyses to determine whether or not a potential downstream capacity constraint exists. We further note that commentary regarding downstream capacity restrictions along the Fourteen Mile Creek have not been included within the ASP, and should be provided as appropriate. **Comment partially addressed.** *The information provided in the response matrix notes that the current capacity calculation of the Speers Road Trunk Sewer represents the best available information, and indicates that further assessment has been deferred to future study;*

supporting documentation should be included within the ASP to demonstrate Town concurrence for deferring these analyses to future studies, and Terms of Reference should be developed to clearly document the requirements of the future studies to further assess the capacity of the Speers Road Trunk Sewer. Although the response provided in the matrix indicates that the proposed development would not have a negative impact on the downstream capacity restrictions within the Fourteen Mile Creek, the ASP should demonstrate that existing infrastructure downstream of the study area does not pose a restriction to the development potential within the study area.

- Item vii) specifies that stormwater management criteria for maintaining base flows are to be included in the ASP. We note that the requirement to maintain base flow is not included in the stormwater management criteria summarized in Section 6.2 of the ASP and should be incorporated into that section accordingly. Furthermore, Section 6.4 speaks to the need to maintain groundwater recharge, and discusses various LID techniques which could be implemented to address this requirement. Additional guidance should be included within the ASP regarding the volume and/or footprint required to achieve the required groundwater recharge. This can be completed using subcatchment-scale modelling techniques applied in other studies, or else through the surrogate use of the routines currently available within PCSWMM for specific LID practices. Finally, Section 6.11 of the ASP provides the water balance assessment to the watercourse features; similar to Comment iv) the features-based water balance should be completed for terrestrial features as appropriate, and should include the groundwater recharge/discharge and evapotranspiration components of the water balance assessment **Comment not addressed.** *The response provided in the matrix suggests that excerpts from Table 24 of the EIS will be referenced in the final submission. The ASP should include specific details regarding the type of infrastructure required to maintain base flows, and should include guidance for the sizing of this infrastructure as part of the future Functional Studies.*
- Item ix) specifies that continuous simulation is to be used for the hydrologic analysis of flooding impacts. The hydrologic analyses for flooding impacts have applied only the design event methodology (using the 24 hour Chicago storm distribution), hence continuous simulation remains outstanding. Additional information is also required regarding the application of the 24 hour Chicago design storm versus other durations (i.e. 4 hour, 6 hour, 12 hour) and/or distributions (i.e. SCS or AES). Furthermore, we note that the PCSWMM methodology has been used for the assessment of the Fourteen Mile Creek, however the information in Appendix G of the ASP indicates that the subcatchments within the Bronte Creek Watershed have been analyzed using the SWMHYMO methodology. Additional information is required in

the ASP to justify the application of the two different hydrologic modelling methodologies. Please note as well that the SWHMHYMO methodology is applicable to simulating design events, and is not capable of conducting continuous simulation as required in the TOR. **Comment not addressed.** *The response provided in the matrix states that the continuous simulation results are provided in the December 16, 2013 memorandum under the heading "Annual Flows"; we are unable to locate the December 16, 2013 memorandum in the ASP, however note that this section is included in the November 28, 2013 memorandum provided in Appendix F of the ASP (ref. Pipkins-Maxwell, November 28, 2013). Presuming that the December 16, 2013 memorandum has been referenced incorrectly, we note that the information provided in the November 28, 2013 memorandum does not adequately address this requirement; specifically, the continuous simulation completed for the November 28, 2013 memorandum has been based upon modelling data for six select years, and does not encompass a sufficient period of record for completing frequency analysis to demonstrate adequate peak flow control. Consequently, continuous simulation to demonstrate post-to-pre control based upon "real world storms" (as opposed to synthetic design storms) remains outstanding as per the approved Terms of Reference. As a minimum, continuous simulation and frequency analysis should be completed to demonstrate that the stormwater management facility sizing provided in the ASP would adequately address the requirement to provide post-to-pre control for the future development under "real world" storms, as per the requirements of the Terms of Reference, similar to the approach applied for the erosion assessment whereby the 44 year continuous simulation was executed to verify the results obtained from the shorter (i.e. 6 year) continuous simulation.*

We note that the results of the erosion assessment included in appendix H of the ASP (ref. Hrytsak/Parish-Baldesarra, November 29, 2014) indicate that the recommended erosion control strategy provided in the ASP would increase the bankfull erosion potential at site R-73 by 6.19 % compared to existing conditions, and that the results of the full 44 year continuous simulation suggest that the erosion potential may be greater. This increase in erosion potential is considered above the acceptable threshold (typically less than 5 %), hence further consideration of the erosion control strategy and/or an adaptive management plan is required in order to mitigate unacceptable watercourse erosion from occurring post-development. What extended detention volume and drawdown would be required in order to fully mitigate the increased erosion potential along the receiving watercourses? What volume and drawdown time would be required in order to reduce the residual erosion potential to 5% above existing conditions?

The response provided in the response matrix notes that continuous modelling of the Bronte Creek Watershed is being deferred to a later study.

As noted previously, documentation of Town and Conservation Halton concurrence with this approach should be included in the ASP, and Terms of Reference developed for this component of future studies in order to guide practitioners, agencies, and reviewers at the next stage of study.

- Item xi) requires that details of proposed transportation crossing designs be included in the ASP, to ensure passage of aquatic and terrestrial wildlife, and continued natural fluvial geomorphological processes. While Section 6.3 of the ASP notes that these details will be provided for the proposed crossing toward the northwest limit of the Merton study area as part of the detailed design, this information is required within the ASP in accordance with the Terms of Reference. Due to the proximity of the proposed crossing to Bronte Road, appropriate hydraulic analyses should be included in the ASP to demonstrate that the proposed design of the crossing would not increase water surface elevations at Bronte Road, as well as to provide direction and preliminary sizing for the design of the proposed crossing to satisfy hydraulic criteria related to freeboard and overtopping, in addition to addressing the requirements outlined in the TOR related to passage of wildlife and fluvial geomorphologic criteria. **Comment partially addressed.** *The response provided in the response matrix notes that the crossing is to be sized to correspond to the upstream culvert at Bronte Street (i.e. 3.66 m x 2.44 m). Supporting hydraulic analyses are required in the ASP in order to demonstrate that the proposed crossing would satisfy current Region of Halton criteria for freeboard, clearance, and overtopping during the Regional Storm event.*
 - Item xiv) notes that an impact assessment is to be completed to identify, quantify, and describe cumulative impacts on water quality, water quantity, and hydrology. While it is recognized that a qualitative discussion (i.e. description) of anticipated impacts is provided in Table 24 of the EIS, a quantitative assessment has not been included in either the EIS or the ASP related to hydrology and surface water quality, and thus remains outstanding. **Comment not addressed.** *Responses provided within the response matrix suggest that an impact assessment is not required since stormwater management is being proposed for the future development; a cumulative impact assessment is typically required as part of Secondary and/or Tertiary planning studies in order to demonstrate the need/requirement for stormwater management, as well as the effectiveness of the stormwater management strategy proposed.*
- vii) Section 7.1.7 specifies that terms of reference for a monitoring program is to be provided. We note that neither the EIS nor the ASP address this requirement. **Comment not addressed.** *Although the response matrix notes that the monitoring program is included in Section 8 of the EIS, the information provided in this section notes that the duration and frequency are to be determined in*

consultation with Conservation Halton. Furthermore, the monitoring program as currently described does not include monitoring of stormwater management facilities to verify performance, and recommends monitoring TSS and temperature for water quality; additional rationale should be included within the ASP and the EIS to justify excluding other water quality indicators (i.e. nutrients, metals, dissolved oxygen, turbidity, etc.), particularly recognizing the aquatic habitat and presence of redbside dace within the Fourteen Mile Creek. Finally, the temperature monitoring provided in the EIS recommends that the temperature monitoring be completed to verify that water temperatures would not exceed 24 deg. C, however the stormwater management criteria notes that discharge temperatures of 22 deg. C are required for stormwater effluent discharging to watercourses 14W-W1, 14W-W1-1, 14W-W1-2, and 14W-W1-3; recognizing that some, if not all, of these reaches would receive storm runoff from the future development area, the monitoring program should include water temperature monitoring of these reaches to verify that storm effluent does not exceed the 22 deg. C criteria specified in the ASP.

Detailed Comments

The following detailed comments have been provided based upon our review of the recommended stormwater management plan provided in this submission of the ASP.

- i) Details regarding the hydrologic analyses are provided in Appendices F and G of the ASP, regarding the stormwater management facility sizing for development areas within the Fourteen Mile Creek and the Bronte Creek respectively. The following information should be included in the discussion surrounding the hydrologic analyses:
- Impervious coverages by land use and corresponding source/assumptions.
 - Impervious coverages for model subcatchments.
 - Adjustments to soil parameterization and supporting rationale as appropriate.

The information in Appendix F suggests that the hydrologic analyses for the stormwater management assessment were based upon servicing option A, however results are presented in Appendix F and within the main body of the ASP for servicing options A, B, and C. It should be confirmed whether separate hydrologic analyses were completed for each servicing option, and the above statement in Appendix F should be revised as appropriate. **Comment partially addressed.** *The responses provided in the response matrix include additional information regarding the refinement and parameterization of the hydrologic models; this information should be included within the ASP in order to provide an appropriate context and basis for the future analyses to be completed.*

The information in the response matrix also notes that hydrologic analyses have been completed for all land use options, although only the results for Option A have been presented as this was deemed to represent the most conservative condition. The results for all three scenarios should be included in the ASP in order to clearly demonstrate and support this conclusion, as well as to demonstrate that the stormwater management facility sizing provided for the other land use options would provide the requisite post-to-pre development control.

- ii) Section 6.3 (page 23) notes that Regional Storm controls are not recommended on the basis that the hydrologic analyses indicate that the peak flow rates would be anticipated to increase insignificantly (i.e. 0.1 %) as a result of the proposed development. Additional discussion is required to support this modelling result. What is the physical reason for the marginal difference in peak flow rate (i.e. size of development area relative to total contributing drainage area, timing of peak flow rates, etc.)? It is anticipated that a hydrologic assessment of future land use conditions without stormwater management would provide some guidance and insight into the reasonableness of this conclusion. Furthermore, it should be confirmed that the hydrologic analysis for the Regional Storm event have been completed without the proposed stormwater management facilities in-place, in accordance with the current Provincial standards of practice. **Comment not addressed.** *Additional information is required within the ASP to demonstrate that the minor increase in peak flows would not result in an increase to either the depth, frequency, or duration of flooding downstream of the study area, particularly within designated flood vulnerable areas and damage centres.*
- iii) Section 6.3 (page 24) notes that the ASP has relied on the 1994 study completed by Philips Planning and Engineering Limited to establish the design targets for the portion of the Merton area within the Bronte Creek Watershed. The Philips study assessed the hydraulic capacity of the Speers Road trunk storm sewer. As such, the ASP should include additional information and discussion regarding any known or potential capacity constraints between the outlet of the Merton study area at the QEW and the Speers Road trunk storm sewer. **Comment partially addressed.** *As noted previously, the response provided in the response matrix notes that detailed analyses for the Speers Road trunk sewer will be conducted at the site specific stage, however notes that this approach was discussed during meetings to review these comments. We are unaware of any agreement to defer these analyses to a later stage of study. Nevertheless, if the Town and Conservation Halton have accepted an alternative approach to address these comments, particularly if these analyses can be deferred to a later stage of study, then the meeting minutes should be appropriately referenced and included in the ASP, and Terms of Reference should be established to clearly outline the requirements of these analyses at a later stage of study.*

- iv) Section 6.4 (page 26) notes that oil/grit separators are recommended to provide stormwater quality control for areas identified for on-site stormwater management. Consideration should be given toward the use of other on-site stormwater quality techniques (i.e. grassed swales, buffer strips, etc.) as well as LID BMP's (i.e. bioswales) to provide the requisite stormwater quality control for areas with on-site stormwater management. These revisions should also be incorporated into the discussion in Section 6.5 on page 28. Additional discussion is also required to demonstrate that the recommended stormwater quality management strategy would address the current Provincial guidelines related to the protection of Redside Dace habitat. **Comment addressed.**
- v) Section 6.4 (page 27) notes that LID measures to maintain groundwater recharge on residential lots are to include directing roof leaders to pervious areas, and increased topsoil depth. Additional information is required to support the exclusion of other LID infiltration BMP's which have been successfully implemented in residential developments in other areas (i.e. rain gardens, bioswales, bumpouts along the road right-of-way, etc.). Furthermore, this section notes that up to 85 % of the pre-development groundwater recharge may be maintained using the currently recommended approach; the analyses supporting this conclusion are not currently included in the ASP and are required for review. **Comment addressed.**
- vi) Section 6.4 (page 27) identifies various LID infiltration BMP's which may be implemented in employment and commercial blocks, including the use of perforated pipes under parking lots. Please note that current practice of Conservation Halton requires pre-treatment of storm runoff prior to infiltration. **Comment addressed.**
- vii) Section 6.4 (page 25) and Section 6.5 (page 29) recommend source controls in the form of rooftop storage, parking lot storage, rear yard storage, and storage within Municipal rights-of-way. Rear yards and Municipal rights-of-way are typically required to provide a conveyance rather than a storage function, hence it is recommended these references be removed from the ASP. Similarly, the use of parking lot storage is generally less preferable due to potential nuisance flooding issues; this should be acknowledged within the ASP and used to establish a hierarchy of on-site storage alternatives accordingly. **Comment addressed.** *References to storage within rear yards and Municipal rights-of-way have been removed from the ASP.*

In addition, the lot-level storage options provided (i.e. rooftop, parking lot, and underground) are not considered suitable candidates for providing erosion control, due to the longer drawdown times and functional issues related to nuisance flooding, rooftop leakage, and potential capacity issues with underground systems during short inter-event periods. As such, the ASP should distinguish between those lot-level quantity control measures which

would address requirements for flood protection, and the lot-level controls which would address requirements to provide erosion control. **Comment addressed.** *Section 6.4 includes discussion regarding the appropriate conditions/land uses for implementing various source controls.*

- viii) Section 6.5 (page 31) describes two storm servicing options for the development area west of Bronte Road: a) on-site, or b) off-site within the proposed stormwater management facility. A portion of these land is currently within the Bronte Creek Watershed, however both strategies recommend that runoff from these development areas be conveyed toward the Fourteen Mile Creek. As noted in our earlier comments, additional information is required in the ASP and EIS to support the proposed diversion of runoff from the Bronte Creek Catchment. Subject to confirmation that the proposed diversion is supportable, it is suggested that consideration be given toward the latter option of providing stormwater management within the off-site facility, since the urban drainage infrastructure required to convey the runoff from these lands would be designed and constructed as part of the Merton area development. **Comment partially addressed.** *The detailed analysis of Option B, if pursued, is deferred to the next phase of study. Terms of Reference for this component of the future study should be included within the ASP.*
- ix) The information provided in Table 6-2 (page 33) has been compared with the information presented in Appendices F and G for the hydrologic analyses. We note that there are some minor differences between the drainage areas summarized in each table (i.e. generally 0.2 ha or less), hence the information in the appendices and in Table 6-2 need to be reconciled. **Comment not addressed.** *We note that discrepancies between the information in Table 6-2 and Appendices F and G remain unresolved.*

Furthermore, we note that the information provided in Appendices F and G indicate that the erosion analyses have assumed that erosion controls would be applicable to all areas recommended to implement on-site stormwater management by way of rooftop storage, parking lot storage, or underground storage. As noted in our previous comments, the currently recommended on-site stormwater quantity controls are not considered appropriate for providing erosion control; the erosion analyses should therefore be revised to assess the proposed condition in the absence of erosion controls for those areas receiving on-site stormwater management. It is suggested that these analyses also assess the erosion potential for the future land use conditions with stormwater management, with and without the included benefit of LID infiltration BMP's. **Comment not addressed.** *Section 6.9 of the ASP (page 46) defers addressing erosion controls for the smaller parcels through the detailed design stage. Recognizing the erosion sensitivity of the systems as currently noted in the ASP, as well as the residual potential for bank erosion, as demonstrated by the erosion analyses provided in the ASP, it is respectfully suggested that the*

erosion control strategy for the areas requiring site control be established prior to the next stage, as erosion impacts and mitigation assessments typically require a more holistic context.

- x) Appendix G includes a preliminary capacity assessment of the QEW culvert for the Bronte Creek subcatchment, based upon the MTO nomograph for outlet control conditions. A tailwater condition corresponding to the obvert of the culvert has been assumed for the assessment to determine Regional Storm event capacity; additional information is required to support this assumption for the corresponding storm conditions. Furthermore, the capacity assessment has concluded that a head differential of 1.65 m; additional information is required within the ASP regarding the impacts of this head differential to the required grading within the ASP. Finally, the hydraulic analyses should also be completed based upon the inlet control condition for the culvert and the inlet structures, and the results included in the ASP. **Comment not addressed.** *As noted in the response matrix, the hydraulics through the 1500 mm culvert at the QEW are governed by the outlet control condition; as such, the water surface elevation at the culvert outlet determines the flood potential for the upstream properties and requires careful consideration. The response matrix notes that supporting information for the tailwater at the QEW cannot be provided “at this time due to the lack of information that can be obtained”; in the absence of this information, the ASP should include a sensitivity analysis of the hydraulics of the structure in order to demonstrate the flood potential to the upstream properties, so that the grades and operating water surface elevations within the stormwater management facility may be appropriately established at the detailed design stage.*
- xi) Appendices F and G include preliminary stormwater management facility rating curves based upon the hydrologic analyses completed for the three servicing options. As noted in the ASP, the impervious coverage and size of the contributing drainage areas to the stormwater management facilities will need to be refined at detailed design, based upon refinements and revisions to the development area and drainage conditions. As such, the ASP should include adequate and appropriate guidance for the design of stormwater management facilities at the next phase of study. Furthermore, this information is more appropriately included within the main body of the ASP, as opposed to remaining within an appendix, since this information will be of importance to the practitioners at the detailed design stage. **Comment not addressed.** *Although the response provided in the response matrix notes that the stormwater management facility sizing can be added to the main body of the report, the requirements and Terms of Reference for future studies noted in our original comment have not been included in the ASP and remain outstanding. We further note that the storage-discharge relationships for the stormwater management facilities have not been included in the main body of the ASP, although the response matrix notes that this would be done.*

- xii) Section 6.7 recommends the use of inlet control devices (ICD's) to prevent surcharge conditions within the storm sewers. This is considered to be contrary to the general principles provided in the Town's Development Guidelines (2009) which specify that storm sewers should be designed for a free-flow condition. As such, it is recommended that consultation with Town staff be arranged to confirm the acceptance of this approach, or else this recommendation should be removed from the ASP. **Comment addressed.** *The response matrix notes that requirements for ICD's are to be established in consultation with the Town at the detailed design stage.*
- xiii) Section 6.7 specifies that the minimum cover of storm sewers from centre line of road to pipe obvert is 2.5 m, which is consistent with Town standards. This section should also note that the Town suggests that storm sewers be designed to provide 3.0 m cover, and also allows for the use of sump pumps in areas where weeping tiles cannot drain by gravity. **Comment addressed.**
- xiv) The information presented in Appendix H for the erosion assessment indicates that the recommended erosion control strategy would nevertheless result in a residual erosion potential at one site (i.e. Site R-73). The average and maximum residual bed erosion potential at this location would be 3.32% and 4.17 % respectively, and the average and maximum residual bank erosion potential would be 4.87 % and 6.19 % respectively. The ASP should include recommendations for other methods to address this residual erosion impact. **Comment partially addressed.** *Although the ASP includes additional discussion regarding methods to mitigate the residual erosion impact resulting from the implementation of end-of-pipe controls and assumed source controls, the erosion control strategy should be further defined prior to the detailed design stage, particularly as pertains to the requirements and effectiveness of the alternative strategies in areas where source controls would be implemented.*
- xv) Section 6.9 (page 44) provides a discussion about the meteorological data used for the erosion assessment; additional information is included in Appendix F of the TOR for the datasets use. The based upon the information provided in Section 6.9 and Appendix F, it is understood that the erosion assessment was completed using meteorological data for the period from April 1 to October 31 for each of the six years simulated. The information further indicates that the average annual precipitation data for the full meteorological dataset was 467.1 mm. The average annual precipitation in Southern Ontario is typically in the range of 800 mm. As such, additional information is required to justify the utility and applicability of this scoped analytical approach for the erosion assessment, recognizing that it does not fully encompass the seasonal variations in hydrologic conditions and runoff response.

Furthermore, information provided in Appendix F indicates that the erosion assessment has been completed for only six (6) years selected from a forty-

four (44) year period of record, due to the computational time required for a full continuous simulation. While it is recognized that a continuous simulation using 44 years of meteorological data would require a longer computational time than seven months of data from six years, it is nevertheless recommended that a full continuous simulation be completed in order to verify the performance of the recommended erosion controls.

The above comments also apply to the water balance assessment which is discussed in Section 6.11 of the ASP.

Comment partially addressed. *Additional information is provided with the response matrix which indicates that the results of the 44 year continuous simulation yield similar results for the erosion assessment as have been obtained from the 6 year simulation period. Of particular note, the results of the 44 year continuous simulation have indicated a slightly higher residual erosion impact than was reported for the 6 year simulation period, hence the bankfull erosion potential previously reported (i.e. 6.19 %) is considered to be an underestimate compared to what would be anticipated based upon a long-term continuous simulation. As such, the results of the 44 year continuous simulation are considered to highlight the need to provide adequate erosion protection for the Fourteen Mile Creek at the bankfull condition.*

- xvi) Information provided in Section 6.9 (page 44) indicates that the erosion assessment was only completed for servicing option A since this was deemed to represent the “worst case” scenario in terms of required stormwater management controls and “impacts to the receiving watercourses”. Additional information is required to clarify how this option was deemed to represent the worst case scenario in terms of impacts to the receiving watercourse, particularly given that an assessment of the future uncontrolled land use conditions has not been included in the ASP. This comment also applied to Section 6.11 of the ASP regarding the water balance assessment. **Comment addressed.** *Please note, however, the previous comments provided pertaining to the erosion assessment and hydrologic analyses.*
- xvii) Section 6.9 (page 45) includes recommended erosion controls for the subcatchment within the Bronte Creek watershed by way of 40 m³/ha storage with a 24 hour drawdown, in order to provide “general erosion protection benefits”; it is further noted in this section that additional site specific work will be undertaken to identify any additional erosion controls required for the protection of the Bronte Creek. We trust that this additional work will be included with the next submission of the ASP. **Comment partially addressed.** *Based upon the responses provided to the previous comments regarding the analyses for the development area within the Bronte Creek Watershed, it is understood that the analyses required as per the Terms of Reference for the ASP are proposed to be completed as part of future work. Presuming that our*

understanding is correct, and as indicated previously, the ASP should include documentation of Town and Conservation Halton concurrence to defer these analyses to a later stage, and Terms of Reference should be developed and included in the ASP to provide appropriate guidance for practitioners, agencies, and reviewers.

- xviii) Section 6.10 cites a variety of stormwater management facility and landscaping design practices and features which would reduce the thermal enrichment from stormwater management facilities, including such practices as cooling towers. It is recommended that the Town of Oakville provide comment regarding acceptable thermal mitigation practices and features for Town-owned infrastructure. Please note as well that this section of the ASP extends the recommended thermal mitigation measures to include the recommended stormwater management facility within the Bronte Creek Watershed, as well as the Fourteen Mile Creek. **Comment addressed.**
- xix) Table 6-9 in Section 6.11 of the report presents the results of the water balance assessment. As noted previously, the water balance assessment should include the impacts to the evapotranspiration and groundwater components of the water balance. **Comment partially addressed.** *The water balance assessment provided in the hydrogeology report has focused on the impacts which the proposed development would have on groundwater recharge and surface runoff. While it would be preferable for the water balance to assess the change in evapotranspiration in order to characterize the overall impacts and opportunities to manage the impacts to water budget, the information presented in the hydrogeology report is nevertheless considered sufficient to guide the planning and design of LID infiltration BMP's.*
- xx) Section 6.11 (page 50) notes that the annual volume of water in the Saw Whet tributaries will increase with the removal of the ponds, however the erosion potential for the tributaries would not be anticipated to increase based upon the results of the erosion assessment. The erosion assessment was completed for the major reaches of the Fourteen Mile Creek, hence additional information is required within the ASP to discuss whether the erosion potential of the drainage features which connect to the Fourteen Mile Creek would increase, as well as what recommendations to mitigate. **Comment partially addressed.** *Section 6.9 of the ASP notes that, at the detailed design stage, erosion processes of sensitive watercourses will be considered in the siting and design of outlet structures. The ASP should note that additional analyses will be completed, as required by the Town and Conservation Halton, to demonstrate that the stormwater management facilities would not result in an increase to local erosion potential of the receiving watercourses.*
- xxi) Section 7.0 discusses the various components of the stormwater management facilities. Additional information is required regarding the proposed stormwater

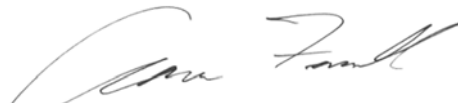
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Town of Oakville
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management outlets to the Fourteen Mile Creek. Are drop structures recommended, or is it proposed to have the stormwater management facilities discharge to existing drainage features? If the latter, would the proposed stormwater management strategy increase the erosion potential of the receiving drainage feature? **Comment addressed.** *The additional text noted in the response matrix has been included in Section 7.6 of the ASP.*

We trust that the foregoing satisfies your current requirements. Feel free to contact our office should you have any questions or require anything further.

Yours truly,

Amec Foster Wheeler Environment & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited


Per: Aaron Farrell, M.Eng., P.Eng.
Associate


Per: Ron Scheckenberger, M.Eng., P.Eng.
Principal Consultant

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3. Natural Heritage System

January 23, 2015

Town of Oakville
c/o Planning Services
1225 Trafalgar Road
Oakville, ON L6H 0H3

ATTENTION: Mr. Kirk Biggar MCIP, RPP, Senior Planner
Long Range Planning, Planning Services

Dear Sir:

Re: Review of the Aquatic Resources and Natural Heritage Resources Components of the PHASE 2 Environmental Impact Study, Merton Tertiary Planning Study, Town of Oakville, Ontario. (Beacon Environmental, October 2014).

Dougan & Associates hereby provides the Town of Oakville with the next peer review of the Phase 2 Environmental Impact Study (EIS) for the Merton (QEW/Bronte Road) Tertiary Planning Study. The review has considered the following documents:

- Phase 2 Environmental Impact Study (EIS) for the Merton (QEW/Bronte Road) Tertiary Planning Study, prepared by Beacon Environmental, October 2014.
- Comments Response Matrix, Merton Tertiary Planning Study Area, Peer Review of the Natural Heritage System (undated, but presumably around October 2014).
- Phase 2 Environmental Impact Study (EIS) for the Merton (QEW/Bronte Road) Tertiary Planning Study, prepared by Beacon Environmental, December 2013.
- 'Response Matrix' entitled Response to Town of Oakville, Region of Halton, and Conservation Halton Comments on Draft Phase 1 EIS for Merton Tertiary Plan (last revised 20 Dec 2013)
- Draft Phase 1 Environmental Impact Study, Merton Tertiary Planning Study, Town of Oakville, Ontario, prepared by Beacon Environmental, May 2013.
- The Merton (QEW/Bronte Road) Tertiary Planning Study Terms of Reference dated February 15, 2013.

The Draft Phase 1 EIS was a 'work in progress', with study area characterization still incomplete, and with no description of the proposed development, impact assessment, monitoring program, etc. The December 2013 Phase 2 EIS incorporated the results of the 2013 field investigations and subsequent analysis, expanding on the Study Methodology and Study Findings report sections, and adding sections: Description of the Proposed Development, Impact Assessment & Mitigation, Monitoring Program - Terms of Reference, Policy Compliance, and Conclusions. It also addressed many of the issues raised in our initial August 2013 peer review. The October 2014 Phase 2 EIS represents a refinement of the earlier 2013 version, fixing deficiencies, making corrections, providing additional clarification, and generally addressing a wide spectrum of peer review comments and concerns.

The following text represents the results of our Phase 2 EIS Peer Review. For continuity and transparency, the complete list of comments raised during earlier versions of the peer review is included in Appendix 1. Comments included in this final submission are divided into two components: 1) response to remaining issues from the Phase 1 EIS review, and 2) response to comments from the (December 2013) Phase 2 EIS review.

The first component only includes outstanding issues following the (October 2013) Phase 2 EIS review; comments previously addressed have been removed¹. Each comment includes our original comment in black, our follow-up response (following the release of the December 2013 Phase 2 EIS) underlined in blue, and our final comments (based on the October 2014 Phase 2 EIS) in bold red text. Response matrix numbering is included to facilitate reference and review.

The second component includes new issues identified during our review of the December 2013 Phase 2 EIS. These comments are provided in black, and our final comments (based on review of the October 2014 Phase 2 EIS) are provided in red.

Phase 1 EIS Peer Review Comments

Aquatic Resources

The following are our comments on the aquatics resources components of the report.

3.2.9.1 Aquatic Habitat Characterization (page 31)

- i. States that "Flow observations were also noted." Were flows estimated? Or simply recorded as present or absent, low or high, etc.? If there was no flow, were there permanent standing pools, or some indication that flow occurred for an extended time, or for a very short time? These are important observations with regard to fish habitat. This detail was not added. No corresponding response in the circulated response matrix. **Latest version of Phase 2 report has added "Observed flow conditions were also noted and recorded as dry conditions, standing water or flowing water". Addressed.**

4.3.9.1 Aquatic Habitat Characterization (page 73) (Addressed in matrix comment #17)

- i. In the third paragraph there is a reference to "aquatic habitat suitable for spawning". The information behind this statement needs to be presented, as these are critical habitats that may be affected by future development (e.g. SWMP discharge points). Apparently still unknown. **Latest version of Phase 2 report states that Species and spawning location were not provided in source document. Addressed.**

4.3.9.4 Thermal Regimes (page 79)

- ii. (page 80) - the nomenclature for the five thermal categories is somewhat different from that used in Figure 13. This appears to still be the case. Thermal regime classes in the text are inconsistent with the Figures 12 and 13. (matrix comment #20 states that this is addressed in Phase 2 report, but there are still inconsistencies) **Addressed.**

¹ To see the complete list of comments raised during earlier versions of the peer review, refer to Appendix 1.

Terrestrial Resources

Section 1 (Introduction) discusses the study area and Figure 1 shows property parcels, however in subsequent sections the discussion is organized under Saw-Whet Golf Course, Third Line Lands, and Enns Lands, however Figure 1 shows the properties under ownership names and parcels that are different from the boundaries shown on other EIS Figures, which lump some sub-areas and do not show distinctions such as Region of Halton lands or the Hydro Corridor. The clear distinction between any studies conducted on the Deerfield Golf Course and within the Fourteen Mile Creek ESA lands is important but not clear in the EIS. The text also mentions studies extending within Bronte Creek Provincial Park but the extent is not shown. Text discussion and data appendices are also ambiguous as to the extent of specific categories of study, and it is clear (and to a degree understandable) that data collection is uneven but the actual coverage and gaps are not readily transparent in the text and mapping. The figures have been updated and are improved. However, there are still some inconsistencies. For example, Figure 1 lists "Saw-whet Lands" yet the text calls it "Saw-whet Property"; "Deerfield Property" is labeled as "Province of ON" in Figure 1, and "IO" (Infrastructure Ontario) is not defined on the map. Figure 1 does not show the 14 Mile Creek valley boundary. Figures have properties owned by "Bronte Green Corporation" while the text calls it "Bronte Creek Corporation". These are all minor discrepancies and don't change the overall conclusions of the report but are confusing nonetheless. Figure 1a has clarified some of the inconsistencies, with Figure 1b also adding clarification; "IO" still undefined on map but defined in text. (matrix comment # 23)

3.2.8 - Lepidoptera and Odonate Surveys (page 30)

- i. Field data for butterfly monitoring should be provided, including time and weather conditions. Cloud cover significantly reduces butterfly and odonate activity. The appendix is helpful, however, for five of the eight survey dates it still does not show cloud cover, only that the conditions were "suitable". Appendix G still does not show cloud cover; it does define temperature (only as > 15 C), wind, and "no precipitation". (matrix comment #31)
- ii. For the Saw-whet G.C., the first two surveys (May 30 and June 23) were done concurrently with the breeding bird surveys, which are recorded as occurring between 05:30 and 11:00. The text states the weather was warm (above 17 °C) doesn't specify if this was the case throughout the survey (05:30). In our experience, most butterfly species do not begin to fly until at least 10:00 (especially in May) so surveys which finished by 11:00 would not adequately detect all butterfly species present. Also, the text doesn't mention cloud cover, which is important as sunny conditions are especially important for butterfly activity earlier in the day. This may explain why very few butterflies were recorded on the spring and summer dates. It appears that the first two surveys were likely deficient and should be repeated so that the time of day and weather conditions are optimum. See response to v. below. See below
- iii. The third Saw-whet butterfly survey was conducted on September 10, which is late for detecting most breeding species (it would mostly detect vagrants) as most species will have finished their flight period by then. This third survey should have been conducted in July. See response to v. below. See below

- iv. The Third Line lands EIS also covered Odonates and Lepidoptera concurrently with breeding bird surveys on May 29, which would be too early in the day. The June 22 survey was a dedicated survey, however, there were no later surveys so species flying in July and August would be missed. [See response to v. below.](#) **See below**
- v. The Enns property had two surveys conducted, on August 22 and 30, which would have missed the majority of species present, typically in June and July. [While we agree that not all species present would be recorded by the surveys, the number and dates/times of the surveys are still fairly weak. For example, for the Saw-whet property, the May 30 and June 23 surveys were too early in the day, and the two surveys in September \(2012 and 2013\) would miss most species \(except for Monarch and other late migrants\). Third Line still only has two surveys \(May 29 and June 22\) and Enns two surveys in August only. The Terms of Reference \(page 10 \(b\) vii\) item g\) asks for targeted surveys for butterflies and odonates in suitable habitat. We do agree, however, that these targeted habitats do not need to be completed on the Deerfield lands as most of this is fairways and greens which would not constitute suitable habitat for either group.](#) **Comment stands; no new surveys for Odonates or Lepidoptera in 2014.** (All addressed in matrix comment #31 ii. –v.)

4.3.8.1 Odonates (page 70)

- i. Re: Beacon fieldwork and (page 71) Re: NRSI fieldwork – Were these incidental observations or results of the dedicated surveys (data should include survey dates of observations)? [As noted earlier, odonate surveys conducted in 2012 and 2013 could have been more comprehensive.](#) **Comment stands; no new surveys for Odonates or Lepidoptera done in 2014.** (matrix comment #39)

4.3.10.6 Significant Wildlife Habitat (page 87)

- viii. Re: "Raptor hunting areas" (page 92) – "Raptor Wintering Areas" is already discussed on page 89. We note there is a SWHTG criterion "Raptor Nesting Habitat" under the "Rare Vegetation Communities or Specialized Habitats for Wildlife" group. There were no nest records since 1983 but apparently no additional surveys were conducted. Nesting Long-eared owls are not easy to find. According to the ROM's Breeding Birds of Ontario (1983) only 73 nests had been documented in the province (as of 1983). [The Cooper's Hawk nest, outside of the TPA, does not likely constitute SWH. We do stand behind our comment that species such as Long-eared Owl are very hard to find nesting, so the level of nest searching in portions of the TPA were likely not detailed enough to find this species if it were nesting.](#) **Comment stands; no acknowledgement of this fact added to text nor were additional nest surveys for Long-eared Owl undertaken.** (matrix comment #41)
- xiv. Mis-assigned or repetitive/redundant categories listed under Species of Conservation Concern include: include: Raptors, Area-Sensitive Birds, Grassland Birds, Other Birds, Amphibians, Reptiles, Mammals and Insects; content should be reorganized according to status levels of conservation concern. [Listing does cover all categories but alignment with references with regard to order would assist readers.](#) **Comment stands; order of categories not changed.** (matrix comment #41)

xviii. The rationalization that there are better examples of Snapping Turtle Habitat would imply that the current study area has been fully documented for this species, and that no habitat outside of the major and minor river valleys should be considered. According to John Boos (Peterborough OMNR), all Snapping Turtle nests are considered SWH by OMNR. Agreed that MNR recommends that non-natural sites not be considered SWH and that final SWH determination rests with the planning authority. However, turtle populations, which are under considerable threat and continue to decline, remain poorly protected in urban areas. Turtles don't have many 'natural' sites available and simply select what is most suitable, regardless of its artificial status. A better strategy to protect turtle populations is necessary. The MNR Ecoregion 7E Criterion Schedule considers a single Snapping Turtle nest SWH. A compensation plan has been proposed but isn't available for review. Some possible options are included in Table 24, the Impact Assessment Matrix. (matrix comment #41)

4.3.12 Natural Heritage System (page 108)

- i. Restoration/Enhancement Areas (pg. 109) – Vegetation unit 12 (i.e. field surrounded by forest) is not identified as a possible restoration/enhancement area, yet if reforested it would result in a significant increase in forest interior habitat, contributing to habitat for area-sensitive forest breeding birds which is was one of the SWH criteria applicable to the 14 Mile Creek valley. Restoration/enhancement areas 1, 2 and 3 are located very close to vegetation unit 12, and areas 2 and 3 would be negatively impacted if vegetation unit 12 was developed. Response inadequate. Section 4.3.12.3 continues to exclude vegetation unit 12 as a key restoration or enhancement area. The value this unit could provide, if restored, is not acknowledged or addressed. The EIS should provide rationale for why it (and any others) were not considered. Comment stands; unit 12 still not included as a key restoration or enhancement area, with no explanation provided in EIS. Still listed as “TBD” on Options A, B and C. The fourth paragraph of section 4.3.12.4 (pages 161/162) define how the nine (9) candidate restoration and enhancement sites were chosen but the text does not explain how these criteria were applied to unit 12 (and resulted in it not being categorized as a candidate area). (matrix comment #45)
- ii. Figure 15 – Vegetation polygons 2q, 2r, 2u, 2v, 37, 39b and 39c should be discussed re: potential restoration/enhancement areas. Revised response: Response not acceptable. As per paragraph 3 on page 150 of the Phase 2 EIS, restoration/enhancement areas are part of the NHS. The selection of restoration/enhancement areas requires greater clarity, especially how one is ranked vs. another. Comment still stands (see above). (matrix comment #45)

5.2 Natural Heritage Constraints to Development (page 112)

- i. Figure 16 - The buffers and setbacks applied to derive Constraints to Development are exclusively feature-based. 7.1.4 of the Terms of Reference do advocate a feature-based identification of constraints, however Section 4.3.12 of new report says “This EIS has adopted as systems based approach to establish an NHS for the TPA.” Clarification is requested. The text in 4.3.12 is unchanged; it still advocates “as [sic] systems based approach”. (matrix comment #46)

October 2014 Phase 2 EIS Comments on New or Revised Material

Aquatic Resources

4.3.9.4 Thermal Regimes

- i. Page 114, Figure 12b - The points in the legend appear to be all the same colour. Also, the figure caption should stipulate that this is dealing with the east and west forks of the east branch of Fourteen Mile Creek. **Addressed.**

4.3.9.4.1 2013 Water Temperature Data

- i. The temperature regime classifications in the text are not consistent with those used in Figures 13a-13c. However, it is generally understood what is meant with the figures, as the inconsistency appears to be a simple naming error that has been repeated. **Addressed.**
- ii. Page 116, last paragraph - Again, there seems to be some confusion with the temperature class nomenclature. **Addressed.**

4.3.10.1 Significant Habitat of Endangered Species and Threatened Species

- i. Page 122, watercourses falling into the habitat regulations - 14W should be added to the list attached to 3. West Branch of Fourteen Mile Creek (14W, 14W-E1, 14W-M1, 14W-W1). **Addressed.**

7.0 Impact Assessment and Mitigation - Table 24 starting on page 176. Lots of good plans in place to minimize impacts to Fourteen Mile Creek. The following are concerns/clarifications.

- i. Page 183. My understanding of the road crossing of 14W-W1 is that it will be upstream of direct fish habitat and Redside Dace habitat. Please confirm and modify text to indicate that this is the case. **Addressed.**
- ii. Page 184. Last bullet under the "Recommended Mitigation" column in the "Redside Dace" row, suggests that restoration and naturalization is planned for Tributary 14W-W1. Please confirm that this will be for the upstream sections considered contributing fish habitat, and not the downstream sections (Reaches SW1 and SW2) considered Redside Dace recovery habitat. **Addressed.**
- iii. Page 185. Under the "Recommended Mitigation" column in the "SWM Facility and Storm Outfalls" row, it is suggested that there are requirements of maximum temperature and dissolved oxygen for discharge to Redside Dace habitat. While I agree with the importance of constructing SWM facilities to mitigate thermal impacts to Redside Dace habitat, how is it possible to ensure, given that these are passive cooling systems, that these temperature limits will never be exceeded? **Addressed. Qualifying statement added.**

8.0 Monitoring Program - Terms of Reference.

- i. Table 25, Page 190 - Under Aquatic Resources (can also be related to Groundwater Resources on page 189) there should be a requirement for the mapping of groundwater seeps and springs, watercress, skunk cabbage, and other observations/indicators of groundwater inputs to Fourteen Mile Creek and its tributaries within the study area. This mapping should be undertaken at similar periods over two years prior to construction. This will indicate the actual pattern of groundwater inputs to the creek system. Potential changes to this pattern will help connect the results of groundwater monitoring to potential impacts to aquatic habitat. **Addressed. Has been included in the Terms of Reference for the Merton Monitoring Plan.**

9.0 Policy Compliance

- i. Page 192, Table 26, Endangered Species Act - It should be noted that the proposed road crossing will be in contributing Redside Dace habitat. **Addressed.**

Terrestrial Resources

6.1 Description of the Proposed Development (page 162)

- i. It is unclear how these three options were developed, other than the statement that they were developed to offer a balanced mix of employment and residential uses at varying densities to serve the needs of the local populations. Why were only 3 options considered in the evaluation? Placement of SWM ponds could benefit from a more strategic assessment based on benefits to NHS (e.g. linkages and buffers). **Response acceptable; should add this to final EIS.**
- ii. Although the farm field on the Saw-Whet property may not be environmentally constrained in its own right, it's an obvious restoration and enhancement area given its local context (*i.e.* it is almost entirely surrounded by core areas of the proposed Natural Heritage System). In fact, it should have been considered for inclusion in the NHS. Its omission is confusing. Why is this area "yet to be determined"? We recommend a long list of restoration and enhancement areas be prepared (including the farm field), showing how they were screened for restoration and enhancement opportunities. Restoration of the farm field could significantly increase available habitat for area-sensitive birds. Please refer to the Great Lakes Factsheet: *Forest Birds in Urban Areas: Habitat Needs of Area-Sensitive Species* http://publications.gc.ca/collections/collection_2009/ec/CW66-260-2006E.pdf. **A table describing how the various restoration/enhancement areas were selected could not be found in the final December 2014 Phase 2 EIS.**
- iii. Figures – Option A, B & C: NHS boundary should be included on mapping. **Response acceptable.**

6.3 Preliminary Grading Requirements (page 168)

- i. Earthworks and the corresponding removal of vegetative cover need to be compliant with the federal Migratory Birds Convention Act (MBCA). Section 6 of the Migratory Birds Regulations (MBRs) made under the 1994 MBCA makes it an offence to "disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird." Environment Canada normally recommends restrictions on vegetation clearing during the core breeding period, which generally correspond to the beginning of May through to the end of July. The EIS should provide direction on avoiding conflict with the MBCA. It is noted that this issue was raised in the Impact Assessment Matrix (page 183). **Response acceptable.**

7.0 Impact Assessment and Mitigation - Table 24 starting on page 176.

- i. Water Balance – it would be desirable that monthly modeling of water balance be provide to assess potential changes that may affect key biota and wetlands. **Response acceptable.**
- ii. Woodlands (page 180) – Discussion of potential impacts and recommended mitigation is good, however there is no mention of the property marked TBD on mapping. Due to the location of this property within the wooded feature there should be discussion of impacts and mitigation in relation to future uses of this area. Restoring this area as part of the

- larger wooded block could contribute to the quality of the larger natural feature and avoid negative impacts that could occur from development in this area. Also see comment 6.1ii. **Response unacceptable. We continue to disagree with the lack of significance attributed to the internal field, especially the fact that it was not considered to be part of the NHS or identified as a restoration area.**
- iii. Birds (page 183) – Text suggest that forest species will be unaffected. However, we are concerned that the 10 m minimum buffers recommended for woodlands may not be sufficient to protect forest breeding birds? Also see comment 6.1ii. **Despite the implementation of similar buffer standards in Halton Region, the argument that woodland birds in the TPA are already semi-tolerant of human disturbance, and that these naturalized buffers will substantially reduce human disturbance post development, we remain concerned that 10 buffers may not adequately protect forest breeding birds. Adjacent impacts associated with typical golf course use and maintenance are different than residential uses. Furthermore, it is also worth mentioning that Significant Woodlands in the City of Hamilton now require a 15 m vegetation protection zone.**
 - iv. Birds (page 183) – We support the recommendation to undertake vegetation clearing outside the breeding season. **Response acceptable.**
 - v. Reptiles (page 183) – A more definitive commitment to compensate for lost turtle foraging and overwintering habitat should be made, not just recommendations. Suggested approach in EIS may not result in an overall neutral impact. It is acknowledged that SWM ponds can provide additional habitat but they are also known to pass along contaminants. Turtle nesting habitat is not mentioned. **The commitment to preparing a detailed compensation plan is appreciated. However, we remain concerned that the components of the plan are unavailable for review at this time. Similar to the conceptual land use options, the number, size and locations of the features should be described and made available for review to provide greater comfort that their life history requirements (including turtle nesting areas) are being adequately addressed.**
 - vi. Reptiles (page 183) – Concerns remain that despite recommending pond removal take place in late summer/early fall that turtles will be negatively impacted. Construction plans should ensure that all turtles discovered during the draining of the ponds are rescued and transported to suitable alternative ponds. Permits will be required to handle turtles. **Response acceptable. However, see above response.**
 - vii. Amphibians (page 183) – Concerns remain that despite recommending pond removal take place between late summer and early February that frogs and toads will be negatively impacted. Construction plans should ensure that all amphibians discovered during the draining of the ponds are rescued and transported to suitable alternative ponds. Permits will be required to handle amphibians. **Response acceptable.**
 - viii. Species at Risk (page 184) – If possible, replacement nest structures for Barn Swallows should be located within the TPA. **Response acceptable.**
- 7.1 Evaluation of Preferred Land Use Options (page 187)
- i. It would be useful if a matrix was provided that reviewed how each of the options address or don't address key NHS protection issues. **The December 17, 2013 evaluation of land use options prepared by SGL did not consider the impacts of adjacent land uses on the NHS, nor was it (or relevant sections) available in an appendix in the EIS for review. Table 24, the Impact Assessment Matrix, does not differentiate between the three options.**

- ii. It appears that Option B does result in the most area being retained in Open Space.
Response acceptable.

8.0 Monitoring Program – Terms of Reference (page 188)

- i. Breeding Bird Species (Table 25, Page 190) – Unless previous bird survey work was specifically conducted in such a way that point count stations can be integrated in a monitoring program, new stations will need to be surveyed pre-development. **It may be possible that the existing point count stations (and the pre-development survey results) can be integrated into the monitoring program, but the response did not specifically address this concern.**
- ii. Breeding Bird Species (Table 25, Page 190) – the reference to the *Amphibian and Reptile Protection Plan* is confusing. **Response acceptable.**
- iii. Amphibians/Turtles and condition of created habitats (Table 25, Page 190) – Assuming newly created ponds are constructed prior to the initiation of development (requires to support any rescued amphibians or turtles), it is unclear why baseline conditions should not be established. **Response acceptable.**
- iv. Amphibians/Turtles and condition of created habitats (Table 25, Page 190) – Clarification is requested as to what the *Amphibian and Reptile Protection Plan* is. **Response acceptable.**
- v. Wildlife Movement (Table 25, Page 190) – It is unclear how long cameras will be collecting data during each of the monitoring periods (*i.e.* pre-, during and post-development). Will the cameras be functional for one night, one month or other length of time? **Response acceptable.**

Conclusions

The Final (October 2014) Phase 2 EIS for the Merton Tertiary Planning Study represents a comprehensive and detailed planning document. It is also a refinement over the earlier December 2013 version of the document, fixing various errors and deficiencies, providing additional clarification, and addressing numerous agency and peer review concerns. In fact, all the fisheries issues raised in the previous two iterations of the EIS (Phase 1 and Phase 2), have been adequately addressed in the Final Phase 2 report. However, a number of issues identified in the review of the terrestrial resource material remain outstanding. Some of them are of relatively minor significance (*i.e.* deficiencies in mapping, field survey effort related to insects, general organization/presentation of information, and concerns related to the integration of existing baseline data into the monitoring program), whereas others are of greater concern. More specifically these include:

- the lack of significance attributed to vegetation unit 12,
- the lack of transparency with respect to the identification and selection of potential restoration and enhancement areas,
- a lack of understanding as to whether the development of the NHS was feature-based or systems-based,
- the inability to review (in this EIS) the compensation plans to protect turtles,
- the minimum width of the buffers recommended to protect woodland breeding birds,
- greater clarity regarding how the three land use options were selected, and
- how each land use option addressed key NHS protection issues.

We trust the information provided above will aid you in your understanding of these lands.

Sincerely,



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DRAFT

Appendix 1

December 2013 Phase 2 Environmental Impact Study
Merton Tertiary Planning Study
Town of Oakville, Ontario –
Peer Review of Aquatic & Terrestrial Resources

March 21, 2014

Town of Oakville
c/o Planning Services
1225 Trafalgar Road
Oakville, ON L6H 0H3

ATTENTION: Mr. Kirk Biggar MCIP, RPP, Senior Planner
Long Range Planning, Planning Services

Dear Sir:

Re: Review of the Aquatic Resources and Natural Heritage Resources Components of the PHASE 2 Environmental Impact Study, Merton Tertiary Planning Study, Town of Oakville, Ontario. (Beacon Environmental, December 2013).

Dougan & Associates hereby provides the Town of Oakville with a peer review of the Phase 2 Environmental Impact Study (EIS) for the Merton (QEW/Bronte Road) Tertiary Planning Study. The review has considered the following documents:

- Phase 2 Environmental Impact Study (EIS) for the Merton (QEW/Bronte Road) Tertiary Planning Study, prepared by Beacon Environmental, December 2013.
- 'Response Matrix' entitled Response to Town of Oakville, Region of Halton, and Conservation Halton Comments on Draft Phase 1 EIS for Merton Tertiary Plan (last revised 20 Dec 2013)
- Environmental Impact Study, Merton Tertiary Planning Study, Town of Oakville, Ontario, prepared by Beacon Environmental, May 2013.
- The Merton (QEW/Bronte Road) Tertiary Planning Study Terms of Reference dated February 15, 2013.

The Draft Phase 1 EIS was a 'work in progress', with study area characterization still incomplete, and with no description of the proposed development, impact assessment, monitoring program, etc. The Phase 2 EIS incorporates the results of the 2013 field investigations and subsequent analysis, expanding on the Study Methodology and Study Findings report sections, and adding sections: Description of the Proposed Development, Impact Assessment & Mitigation, Monitoring Program - Terms of Reference, Policy Compliance, and Conclusions.

The following review of the Phase 2 EIS is divided into two components. The first component is the Phase 1 EIS comments, annotated as to whether they were addressed in the Phase 2 EIS. For clarity, annotated text is shown in bold and is underlined. Response matrix numbering is also included to facilitate future reference or review. The second component is a set of additional comments on the new material incorporated into the Phase 2 EIS.

Phase 1 EIS Peer Review Letter with Annotated text reflecting Phase 2 EIS Content

General Comments

It is recognized that the Draft Phase 1 EIS is a 'work in progress' with study area characterization still incomplete, in terms of the Beacon work and other consultants whose work must be reported in the EIS. Our review has identified certain gaps in information, which may be addressed in a subsequent report version.

The Terms of Reference identify various levels of study for the EIS: a) Entire study area, generally from background information on specified biophysical resources, but with potential for supplementary fieldwork as required; b) Site-specific – Saw-Whet and Third Line lands, with detailed characterization of ground and surface water as well as geomorphic and natural heritage assessments; and c) Site-specific – Bronte Creek catchment, with similarly detailed studies under the environmental policy framework. We have concerns with the uneven biological monitoring coverage as evidenced on Figure 6 and as discussed in the comments. The Terms of Reference leave room for misinterpretation, so the EIS would benefit from a clearer discussion at the outset as to how the studies were planned and staged. The additional data contained in the December 2013 Phase 2 EIS does fill in many of the data gaps and 'even' out the coverage between the four main study sites within the TPA. (matrix comment #1)

The Phase 1 EIS sections on hydrogeology and hydrology apparently do not incorporate the most recent studies by other members of the TPS study team. Those documents are being peer reviewed separately by others, however our own scope does not extend to reviewing the additional supporting documents. The EIS will need to report on these other studies in order to meet the Terms of Reference. The Phase 2 report does discuss hydrogeology and hydrology in greater detail than in the Phase 1 report; our comments are based solely on the Phase 2 EIS content. (matrix comment #2)

The Beacon EIS references other Tertiary Plan Area consultant reports for further information on site-specific natural heritage studies. Given the comprehensive Terms of Reference for the EIS, all necessary content should be provided within the Beacon Phase 1 EIS, as the review of further studies is outside the scope of the Peer Review. Response accepted. (matrix comment #3)

The complexity of land parcels and ownerships, and the coverage of relevant data, is not clear in the EIS and could definitely be better referenced for clarity. Gaps in data, combined with some assumptions regarding interpretation of constraints, lead us to conclude that the current depiction of constraints to development in some areas is preliminary and subject to adjustment. The tables and figures have been updated to show more clearly the boundaries of the four main study areas (plus the 14 Mile Creek area), and also illustrate well the amount and nature of field work done in them. Consideration should be given to reorganizing Figure 16 into two or three figures as it contains a lot of information at this scale and can

therefore be difficult to interpret. However, Figure 17, which shows the comprehensive constraints, is the main goal and is very clear. (matrix comment #4)

Aquatic Resources

The following are our comments on the aquatics resources components of the report.

2.1 Federal Fisheries Act (page 6).

- i. Under the new Fisheries Act the authorization of a HADD will not trigger a CEAA review. As of this writing, we still do not know how the revised Fisheries Act will treat the protection of fisheries resources within a development. Has been updated in Phase 2 for new Fisheries Act (matrix comment #5)

Figure 5

- i. "Water Temperature" locations should indicate that these are continuous temperature logger locations, and "Surface Water Flow" locations should indicate that spot water temperatures, and temperature loggers at W1, W2, S1, and S2, were also taken/deployed at these locations. Addressed. (matrix comment #6)

3.3.1 Background Review (page 24).

- i. A report apparently not included in this review of background information was "Fourteen Mile Creek Main and West Branches Subwatershed Plan. Philips Engineering, June 2000 (Revised January 2002)". Has been added to Phase 2 report. (matrix comment #7)

Figure 6

- i. Because all of the other location symbols had no specific labels, or were labelled within the symbol, it was not immediately apparent that the black number with the white background in the vicinity of the "Fisheries Survey" location symbol, was associated with the Fisheries Survey symbol. Perhaps including an example number label with the location symbol in the legend would make this clearer. Also, the superscript indicates that the information is referencing itself (this report), and likely should indicate that the information comes from Conservation Halton. Recommendations have been implemented in this figure. (matrix comment #8)

3.2.9.1 Aquatic Habitat Characterization (page 31)

- i. States that "Flow observations were also noted." Were flows estimated? Or simply recorded as present or absent, low or high, etc.? If there was no flow, were there permanent standing pools, or some indication that flow occurred for an extended time, or for a very short time? These are important observations with regard to fish habitat. This detail was not added. No corresponding response in the circulated response matrix.

3.2.9.4 Stream Temperature Monitoring (page 32)

- i. Table 3. - Can't find these stations, other than the above Stn 1 and Stn 2, easily on a map.
- ii. The points on the map that indicate flow monitoring should indicate that temperatures were also gathered at these locations (see Figure 5). Addressed. (matrix comment #9)

4.1 Tertiary Plan Setting (page 35)

- i. "Ontario Hydro Right-of-Way" is believed to be now "Hydro One Right-of-Way". [Corrected in Phase 2 report.](#) (matrix comment #10)
- 4.2.5 Hydrogeology (page 38) [Has been expanded and improved to address comments.](#) (matrix comment #11)
- i. Given the importance in groundwater discharge and processes to the instream conditions of 14 Mile Creek, and the maintenance of essential habitats for Redside Dace in this area, a more detailed treatment of groundwater should be provided, e.g. greater integration of groundwater processes and the observed water flows and water temperatures in study area watercourses.
 - ii. Even though it is offsite, discussion should deal with the major discharge point just north of Upper Middle Road that provides all the baseflow coming into the upstream end of the study area.
- 4.2.5.3 Recharge/Discharge Conditions (page 38).
- i. This is very important to understand, as the fish community, and the Redside Dace population in particular, relies on these groundwater sources. It must be thoroughly understood so that the existing groundwater and thermal regimes can be protected under any future development scenarios. More detail and integration of temperature information must be provided. For example: it is stated on page 39 that small gains in flow occur in reach 14W-W1, however, this has not been related to the separate observation in the Thermal Regime section that 14W-W1 is the coldest stream in the study area. Somewhere in the report groundwater and thermal regime must be linked to Redside Dace habitat, and discussed. [Appears to be addressed in Phase 2 report.](#) (matrix comment #12)
- 4.2.5.4 Base Flows (page 38).
- i. During some fisheries field work undertaken in 1998/1999, the flow in the main channel of 14 Mile Creek started about 100 m upstream of Upper Middle Road. Within a small stretch of watercourse, flow went from nothing to about 10 L/s or more during those dry summers. This discharge point is an important feature of the aquatic habitats within the study area, and must be fully addressed (characterized, protected, monitored, etc.) to the extent possible given that it is outside of the study area, as it is critical to the downstream habitats, in particular Redside dace habitat, that occur in the study area. [More detail has been added.](#) (matrix comment #13)
- 4.2.7.3.1 Meander Belt Widths (page 47).
- i. The reaches in Table 9 are not shown on a map, but appear to be within Reaches 9b and 9c. This should be indicated somewhere to avoid confusion. [Now shown in Figure 5.](#) (matrix comment #14)
- 4.3.1 Background Review (page 50).
- i. Missing report "Fourteen Mile Creek Main and West Branches Subwatershed Plan, June 2000, revised January 2002." by Philips Engineering Ltd. This report should be included in the background review. [Addressed.](#) (matrix comment #15)
- 4.3.9 Aquatic Resources (page 72).
- i. Again, the report "Fourteen Mile Creek Main and West Branches Subwatershed Plan, June 2000, revised January 2002, Philips Engineering Ltd." is missing from this list. [Addressed.](#) (matrix comment #16)

4.3.9.1 Aquatic Habitat Characterization (page 73) (All addressed in matrix comment #17)

- i. Conspicuously lacking are photographs that show representative sections and important features of each habitat area. A few photos could be included in the text, or a larger set could be included in an appendix. Some photos have been added in an appendix.
- ii. In the third paragraph there is a reference to "aquatic habitat suitable for spawning". The information behind this statement needs to be presented, as these are critical habitats that may be affected by future development (e.g. SWMP discharge points). Apparently still unknown.
- iii. Figure 3 appears to be the incorrect figure referenced. Corrected.

4.3.9.2 Fish Community, second paragraph (page 74) (All addressed in matrix comment #18)

- i. The report states that since 1972, 22 species of fish have been collected from the stations within the Tertiary Planning Area, with over half of these species (14) still persisting in 2010 and 2012. As discussed at our first meeting, this does not necessarily mean there has been a reduction in species diversity, but may be more a factor of the number of different and varied times that the community has been sampled since 1972, compared to a smaller subset of sampling occasions in 2010 and 2012. Addressed in text.
- ii. In the fourth paragraph it is mentioned that MNR advised not to collect fish, however, if the concern was for the stress of sampling on Redside Dace, then MNR should have allowed sampling in the minor tributaries which likely do not contain Redside Dace, but not in the main west and east channels of 14 Mile Creek where Redside Dace are already known to occur. This would help in determining the fish community sensitivities required to plan watercourse treatment and protection. Not changed, but this is MNR's direction.
- iii. Table 13 (page 75) would have been better organized if the stations were along the top and the years were ranked in order within the cells, as it would be much more useful from the perspective of evaluating community assemblages associated with location and habitat. By ranking the years captured within each cell, the ability to discern trends over time on a species basis at a particular location is retained. Revised as suggested.

4.3.9.2.1 Redside Dace (*Clinostomus elongatus*) (page 77)

- i. In the second paragraph, "open habitats" should be changed to "open terrestrial habitats" Corrected. (matrix comment #19)

4.3.9.4 Thermal Regimes (page 79)

- i. Thermal regimes in the different watercourses need to be integrated or related somehow to groundwater. This is very important to understand, as the fish community, and the Redside Dace population in particular, relies on these groundwater sources, and so a thorough understanding is needed so that the existing groundwater and thermal regimes can be protected. Other biophysical (e.g. shade) attributes should be discussed as well. Addressed in Phase 2 report. (matrix comment #20)
- ii. (page 80) - the nomenclature for the five thermal categories is somewhat different from that used in Figure 13. This appears to still be the case. Thermal regime classes in the text are inconsistent with the Figures 12 and 13. (matrix comment #20 states that this is addressed in Phase 2 report, but there are still inconsistencies)

4.3.11.2 Fourteen Mile Creek Valley ESA (ESA #12) (page 105)

- i. Table 20, primary criteria #9 (page 107) - If the proposed ESA boundary is adopted, which includes the short section of 14 mile Creek upstream of Upper Middle Road, then the ESA will include a significant groundwater discharge area. [Addressed. See same numbered section in the Phase 2 evaluation.](#) (matrix comment #21)

5.2 Natural Heritage Constraints to Development (page 112) (All addressed in matrix comment #22)

- i. In the third paragraph it mentions "The presence of a Redside Dace fishery will..." which should be changed to "The presence of a Redside Dace population will...". [Corrected.](#)
- ii. Table 22, second row entitled Habitat of Threatened and Endangered Species (page 113) - Table 22, third row entitled Fish Habitat (page 113) - The development setbacks for fish habitat are not specifically identified in Figure 16. However, could this be the same as the "setback to meander belt" that is defined in Figure 16? If this is the case, does there need to be an additional setback delineated between Bronte Road and the dripline of the existing ESA boundary, along watercourses 14W-W1, 14W-W1-2, and 14W-W1-3? [Addressed.](#)

Terrestrial Resources

Section 1 (Introduction) discusses the study area and Figure 1 shows property parcels, however in subsequent sections the discussion is organized under Saw-Whet Golf Course, Third Line Lands, and Enns Lands, however Figure 1 shows the properties under ownership names and parcels that are different from the boundaries shown on other EIS Figures, which lump some sub-areas and do not show distinctions such as Region of Halton lands or the Hydro Corridor. The clear distinction between any studies conducted on the Deerfield Golf Course and within the Fourteen Mile Creek ESA lands is important but not clear in the EIS. The text also mentions studies extending within Bronte Creek Provincial Park but the extent is not shown. Text discussion and data appendices are also ambiguous as to the extent of specific categories of study, and it is clear (and to a degree understandable) that data collection is uneven but the actual coverage and gaps are not readily transparent in the text and mapping. [The figures have been updated and are improved. However, there are still some inconsistencies. For example, Figure 1 lists "Saw-whet Lands" yet the text calls it "Saw-whet Property"; "Deerfield Property" is labeled as "Province of ON" in Figure 1, and "IO" \(Infrastructure Ontario\) is not defined on the map. Figure 1 does not show the 14 Mile Creek valley boundary. Figures have properties owned by "Bronte Green Corporation" while the text calls it "Bronte Creek Corporation". These are all minor discrepancies and don't change the overall conclusions of the report but are confusing nonetheless.](#) (matrix comment #23)

To better support interpretation of Table 2 (Recent Ecological Surveys), we would recommend a corresponding figure that summarizes the scope of the various seasonal studies listed in Table 2, and clarity elsewhere in the report and Appendices. Appendix B (ELC Data Cards) denotes the site as "Saw-Whet" but the data clearly covers lands mapped outside the Saw-Whet Golf Course, and data cards from NRSI and Dance are not included. Table 2 should be revised or supplemented with an integrated listing of all studies, cross-referenced to the properties shown on Figure 1, and indicating whether these studies are ongoing or otherwise incomplete/lacking. [Table 2, Figure 6, and Appendix H summarize the new and existing data collected in a](#)

clear and easy to read manner. (matrix comment # 24)

3.2.1 Background Review (page 24)

- i. Additional background documents that could be checked for records include: Birds of Hamilton (Curry 2006), Ontbirds listserv, South Peel Naturalists Club publications, Hamilton Noteworthy Bird records, and the Toronto Ornithological Club database; these encompass a lot of regional records. The butterfly, mammal and herpetological atlases for Ontario may also contain additional records. Agreed - a lot of the data in these sources is not vetted, and it is unlikely that any records exist as it is mostly private property and/or not covered by naturalists. (matrix comment #25)
- ii. Field notes reflecting the use of the protocols for OBBA and MMP should be included in the Appendices. Field notes are helpful for peer reviews as it allows the reviewer to check original field notes for accuracy and determine if the summary tables reflect the work appropriately. However, we understand that this was not in the scope of the Terms of Reference and, as such, was not required. (matrix comment #25)

3.2.3 Vegetation Surveys (page 26)

- i. Seasonal coverage for flora surveys is relatively even; Third Line, Saw-Whet and 14-Mile Creek ESA all have spring, summer and fall coverage. The Enns and Deerfield properties would benefit from May coverage for spring ephemerals. Response accepted - it is not likely that additional floral surveys in the Deerfield property would yield relevant information. The Enns property was covered adequately in 2013, and the 14 Mile Creek property is being protected in its entirety. (matrix comment #26)

3.2.4 Amphibian Surveys (page 27)

- i. We note that additional surveys are underway in 2013 for the Enns, Deerfield and Saw-whet G.C. properties, and therefore development constraint areas may need to be revised; Data cards for MMP monitoring stations should be provided, including time and weather conditions. Appendix H summarizes the 2013 surveys appropriately. See comment for 25ii regarding original field notes. (matrix comment #27)
- ii. The Saw-whet G.C. apparently only had amphibian surveys on May 8 and June 9 2012; an earlier survey in April should have been conducted according to MMP protocols. Table 2 should include dates and scope of additional 2013 surveys. April amphibian surveys were conducted in 2013. (matrix comment #27)
- iii. A Third Line amphibian survey was conducted on March 22 2012 and no April surveys were conducted; the text indicates that protocols were followed, but this date is outside the normal MMP protocol timing windows; we understand that 2012 was unseasonably warm in late March and that frogs began calling early, but there should be some acknowledgement stating that this was the reason why the protocols were not adhered to as well as a discussion of any potential gaps that resulted from lack of April surveys. Text has been updated accordingly regarding the early amphibian calling season in spring 2012. (matrix comment #27)
- iv. Figure 6 uses different levels of amphibian survey location detail on different properties; it would be helpful if the figure illustrated where all call stations were for amphibians.

Figure 6 has been updated appropriately to show the location of all amphibian survey stations. (matrix comment #27)

- v. Figure 6 suggests that survey coverage is uneven across the TPA. The text suggests that Beacon did some of this survey work but the areas actually surveyed are unclear; see above for a recommended approach to indicate the status of surveys on all properties shown on Figure 1. Given the uneven nature of the sites regarding amphibian habitat, the additional surveys conducted in 2013 appear to adequately cover the habitats in the TPA, and Figure 6 illustrates this clearly. (matrix comment #27)

3.2.5 Reptile Surveys (page 28)

- i. We note that additional surveys are underway in 2013 for the Enns, Deerfield and Saw-whet G.C. properties, and therefore development constraint areas may need to be revised. The constraint analysis did consider the 2013 survey data, but did not result in the boundaries being changed. (matrix comment #28)
- ii. Field data for reptile monitoring should be provided, including time and weather conditions. Appendix H updates the reptile survey data accurately. (matrix comment #28)
- iii. The Third Line lands received more detailed snake surveys in locations mapped on Figure 6; Saw-whet G.C. and Enns property studies only recorded snakes on an incidental basis; no data points are shown on Deerfield or Region of Halton lands; this uneven coverage is inadequate given the species on record in the overall area. We understand that additional cover board studies are underway in 2013 and trust that these deficiencies will be addressed. Concerns regarding coverage were addressed. (matrix comment #28)
- iv. The text says that NRSI conducted turtle surveys; however Figure 6 does not indicate locations. Figure 6 has been updated accordingly regarding turtle surveys. (matrix comment #28)
- v. According to the dates listed, it appears that the cover boards were checked 6 times, not 5 times as indicated; this should be clarified. Text corrected. (matrix comment #28)
- vi. The text (page 29) refers the reader to the NRSI (2012) EIS for details on the turtle survey methodology; the methodology should be provided in the Phase 1 EIS, otherwise we cannot verify that the surveys were conducted appropriately. The Phase 2 EIS text now describes turtle survey methodology. (matrix comment #28)
- vii. Figure 6 indicates that survey coverage is uneven across the TPA; the text indicates that some additional surveys are underway in 2013. See above for a recommended approach to indicate the status of surveys on all properties shown on Figure 1. Figure 6 has been updated appropriately. (matrix comment #28)

3.2.6.1 - Breeding Bird Surveys (page 29)

- i. Field notes should be provided; survey coverage was apparently quite detailed on the Third Line site but very incomplete elsewhere. The time of day and weather conditions should be provided. Appendix summarizes the 2013 BBS adequately. See comment for 25ii. (matrix comment #29)

- ii. Figure 6 suggests that the lands to the immediate east of the Saw-Whet property were not surveyed; the avifauna on these lands will be affected by development and need to be fully documented. The breeding bird survey route appears to adequately cover the 14 Mile Creek valley, and certainly any areas within 120 metres of lands proposed for development. As such, Species-at-Risk documented within the valley (e.g. Eastern Wood-Pewee) have been adequately documented. (matrix comment #29)

3.2.6.2 - Wintering Bird and Owl Surveys (page 29)

- i. Figure 6 indicates two locations where winter surveys were conducted. However, it should also indicate that winter surveys were conducted on the Enns property. Given the important historical records, winter bird and owl surveys on the Third Line property should have also been conducted. Figure 6 has been updated to show the owl surveys on the Enns property. It is agreed that the Third Line property has sub-optimal owl roosting habitat and no documented evidence of past usage in winter; therefore, owl surveys there would not likely yield useful data. (matrix comment #30)

3.2.8 - Lepidoptera and Odonate Surveys (page 30)

- i. Field data for butterfly monitoring should be provided, including time and weather conditions. Cloud cover significantly reduces butterfly and odonate activity. The appendix is helpful, however, for five of the eight survey dates it still does not show cloud cover, only that the conditions were "suitable". (matrix comment #31)
- ii. For the Saw-whet G.C., the first two surveys (May 30 and June 23) were done concurrently with the breeding bird surveys, which are recorded as occurring between 05:30 and 11:00. The text states the weather was warm (above 17 °C) doesn't specify if this was the case throughout the survey (05:30). In our experience, most butterfly species do not begin to fly until at least 10:00 (especially in May) so surveys which finished by 11:00 would not adequately detect all butterfly species present. Also, the text doesn't mention cloud cover, which is important as sunny conditions are especially important for butterfly activity earlier in the day. This may explain why very few butterflies were recorded on the spring and summer dates. It appears that the first two surveys were likely deficient and should be repeated so that the time of day and weather conditions are optimum. See response to v. below.
- iii. The third Saw-whet butterfly survey was conducted on September 10, which is late for detecting most breeding species (it would mostly detect vagrants) as most species will have finished their flight period by then. This third survey should have been conducted in July. See response to v. below.
- iv. The Third Line lands EIS also covered Odonates and Lepidoptera concurrently with breeding bird surveys on May 29, which would be too early in the day. The June 22 survey was a dedicated survey, however, there were no later surveys so species flying in July and August would be missed. See response to v. below.
- v. The Enns property had two surveys conducted, on August 22 and 30, which would have missed the majority of species present, typically in June and July. While we agree that

not all species present would be recorded by the surveys, the number and dates/times of the surveys are still fairly weak. For example, for the Saw-whet property, the May 30 and June 23 surveys were too early in the day, and the two surveys in September (2012 and 2013) would miss most species (except for Monarch and other late migrants). Third Line still only has two surveys (May 29 and June 22) and Enns two surveys in August only. The Terms of Reference (page 10 (b) vii) item g) asks for targeted surveys for butterflies and odonates in suitable habitat. We do agree, however, that these targeted habitats do not need to be completed on the Deerfield lands as most of this is fairways and greens which would not constitute suitable habitat for either group. (All addressed in matrix comment #31 ii. - v.)

4.3.2.1 Vegetation Communities (page 51)

- i. Page 52 states that none of the vegetation communities are considered rare, however two communities listed have rarity status as per Appendix M of the Significant Wildlife Habitat Technical Guide (MNR 2000): Fresh-Moist Black Walnut Deciduous Forest (FOD7-4) is ranked S2S3, and Dry-Fresh Hickory Deciduous Forest (FOD2-3) is ranked S3S4. This should be clarified in the text. Responses Accepted. (matrix comment #32)
- ii. The Saw-Whet land vegetation communities are described in some detail whereas Third Line Lands and Enns Property are just briefly summarized. Given the comprehensive Terms of Reference for the EIS, content should be provided at a uniform level of detail within the Phase 1 EIS. Vegetation community descriptions have been updated. (matrix comment #32)

4.3.2.2 Flora (Page 59)

- i. Flora findings (native status, species ranks etc.) are discussed in detail for the Saw-Whet Lands, 14-Mile Creek, and Third Line, however this detail is lacking for the Enns property. However, the actual distribution of botanical surveys is unclear based on the locations as shown on Figure 6. Section 4.3.2.2 and Figure 6 have both been updated accordingly. (matrix comment #33)

4.3.2.3 Significant Flora (page 60)

- i. The text states that Sharp-leaved Goldenrod and Slender Sedge have been historically reported but that there are no recent sightings. Given that these species form part of a complement of species attributed to specialized habitats that also occur in Bronte Provincial Park, did surveyors specifically search for these species? These species were specifically searched for - response accepted. (matrix comment #34)
- ii. Figure 6 is vague as to the extent of botanical sampling. Figure 6 has been appropriately updated. (matrix comment #34)

4.3.4 Breeding Birds (page 63)

- i. Apparently Beacon did not conduct breeding bird surveys within the 14 Mile Creek valley, rather only along the edges from the Saw-whet G.C. (an exception was made to search the valley for wintering Northern Saw-whet Owls). Therefore, the EIS relied on data from the Halton NAI and the OBBA (2001 – 2005) (Axon et al (1987) would be

- considered historic). [The report was adequately updated to reflect 2013 breeding bird surveys conducted in the 14 Mile Creek valley.](#) (matrix comment #35)
- ii. On page 65, the text notes that one of the eight species heard calling from the 14 Mile Creek valley was Eastern Wood-Pewee, which has been nominated by COSEWIC and will therefore likely be added to the provincial ESA list; therefore, the EIS should discuss the implications of this. [The report was adequately updated with a discussion of Eastern Wood-Pewee in the 14 Mile Creek valley.](#) (matrix comment #35)
 - iii. We note that two Savannah Sparrows were documented but the location is not referenced; the area(s) are of interest as they could also support Eastern Meadowlark and/or Bobolink, which are provincially Threatened. [The report adequately discusses the Savannah Sparrows found during the breeding bird surveys as well as the potential for Bobolink and Eastern Meadowlark.](#) (matrix comment #35)
 - iv. 1st paragraph on page 66 – While no Eastern Meadowlarks were detected as breeding on the Saw-Whet property in 2012, the text should consider if there is any suitable habitat for the species on or adjacent to the Saw-Whet property, or in the overall study area. [Text on Eastern Meadowlark acceptable.](#) (matrix comment #35)
 - v. 3rd paragraph on page 66 – Why was the Yellow-bellied Sapsucker thought to be a late migrant? [The habitat at Third Line does appear to be unsuitable for Yellow-bellied Sapsucker \(from NSRI 2012\); the record from Axon et al. \(1987\) is historic and it is unclear whether it was a breeder or late migrant with no further details.](#) (matrix comment #35)
 - vi. 4th paragraph on page 66 – All species observed within or adjacent to (*i.e.* within 120 m minimum as per the Natural Heritage Reference Manual) the TPA should be listed. Those that were documented outside the TPA can be identified and discussed separately. The fact that a Species at Risk was documented adjacent to the TPA study area is relevant and the potential impacts of the proposed development should be appropriately considered. [Appendix E has been updated to show birds found in the adjacent 14 Mile Creek valley.](#) (matrix comment #35)
- 4.3.5.1 Migratory Birds (page 66)
- i. Re 1st paragraph (page 67): fall surveys on Enns property, the text states “some of which were probably recorded in the adjacent woodland”; a more definitive discussion of species and locations should be provided as this is apparently within adjacent lands. [Appendix F1 adequately shows the Dance Environmental data for the Enns property.](#) (matrix comment #36)
 - ii. The text states on page 67 that “Winter bird surveys of the Enns property are scheduled for winter 2012/2013”; however the results were not included in the EIS (May 2013). [The EIS adequately documents the winter bird surveys for the Enns property from 2012/2013.](#) (matrix comment #36)
- 4.3.5.2 Wintering Owls (page 67)
- i. Christmas Bird Count (CBC) data (reviewed by Beacon) should be listed in the documents utilized in the Background Review section. [CBC data is listed in Background Review.](#) (matrix comment #37)

- ii. Bird records from local field naturalists clubs could be reviewed to better understand historical usage of the area. [See 25ii. \(matrix comment #37\)](#)
- iii. The attempts to gain information are commendable. Nevertheless, local CBC data should be available to indicate what sub route the Tertiary Planning Area falls within. Data for those sub routes should be available. [It is not likely that the CBC data, even if tracked down, would provide much useful information for these mostly private land holdings. \(matrix comment #37\)](#)
- iv. Although Long-eared Owls may flush when approached but they don't always do so; Saw-Whet Owls don't flush readily. Given the fact that owls are not always easy to detect, that no owls were observed during the 3 survey visits does not eliminate the possibility that they may be utilizing the habitat. The number of owls that overwinter fluctuates annually depending on food availability and snow depth locally and further to the north. Therefore, it may not be accurate to characterize local usage based on a single season of observations. More surveys may be warranted given the important historical records. [We contend that it would still be more accurate to base the current usage of owls in the 14 Mile Creek valley on more than one winter of surveys. However, even surveys over five or more winters may not show the usage of the valley in a peak winter \(i.e. during a high influx year for irruptive species\). Given that the valley is not being directly affected, and that there has been no recent documentation of significant owl usage found in the background review, conducting multi-winter surveys may not provide much additional information. \(matrix comment #37\)](#)

4.3.6 Herpetofauna (page 68)

- i. This section lists records of Snapping Turtle and Milksnake for the Deerfield G.C., which lies between the Saw-whet G.C. and the Third Line lands; given the records and recent observation of Milksnake on Third Line lands, specific surveys should be conducted for these two species on the Deerfield G.C. and Region of Halton lands. [Nine and four reptile surveys were conducted for the Saw-whet property and Deerfield lands, respectively, which seems adequate considering their size and cover; all surveys seemed to have appropriate times and dates, and the EIS has been updated accordingly. \(matrix comment #38\)](#)
- ii. The text (page 69 4th para) states that there were nine (9) herptile species confirmed on the Third Line lands; however, the subsequent text only lists seven (four anuran, three snakes, no turtles); Appendix F only lists six for the Third Line lands. Are there other species, or is this statement in error? [This typo has been corrected in the Phase 2 report. \(matrix comment #38\)](#)

4.3.8.1 Odonates (page 70)

- i. Re: Beacon fieldwork and (page 71) Re: NRSI fieldwork – Were these incidental observations or results of the dedicated surveys (data should include survey dates of observations)? [As noted earlier, odonate surveys conducted in 2012 and 2013 could have been more comprehensive. \(matrix comment #39\)](#)
- ii. Re: last paragraph - The concentration of uncommon and rare species could suggest that this habitat is locally important and needs to be considered for protection. Until

odonate species status is reviewed and updated (at least provincially), status information should not be discounted without credible evidence that species are more common. Table 16 shows that pond 4e was considered as SWH based on the occurrence of the Swamp Spreadwing (S3); it was subsequently rejected as candidate SWH based on the fact that the species is not confirmed as breeding and that the pond is constructed. Given that this species can wander and that a constructed pond of limited size does not represent high quality habitat overall, this analysis seems reasonable. (matrix comment #39)

4.3.10.5 Significant Valleylands (page 87)

- i. Re: “Conservation Halton considers the Bronte Creek Valley a major valley system and the Fourteen Mile Creek a minor valley system.” Please provide reference. Reference accepted. (matrix comment #40)
- ii. Where criteria have not been developed by a planning authority, the Natural Heritage Reference Manual (2010) provides biophysical criteria that can be applied. Response accepted. (matrix comment #40)

4.3.10.6 Significant Wildlife Habitat (page 87)

- i. Re: Table 15 (page 87) states that criteria are organized according to the four general categories that they belong to. However, a number of criteria have been incorrectly placed, and titles of the criteria do not always match those used in the SWHTG (2000), although the EIS states that it was followed. Some of the criteria categories used are confusing and some criteria overlap in the table. Although organization remains confusing, all SWH categories are considered; response acceptable. (matrix comment #41)
- ii. Re: “Landbird/shorebird/butterfly migratory stopover area” (page 89) – The study area and valley of 14 Mile Creek is within 5 kilometres of the Lake Ontario shoreline, and should qualify as a significant landbird migratory stopover area. Table 16 indicates that the 14 Mile Creek valley is considered as candidate SWH for landbird stopover habitat - therefore, response accepted. (matrix comment #41)
- iii. Re: “Bat/reptile hibernacula” (page 90) –The corresponding criterion in the SWHTG is “Bat maternal roosts and hibernacula”. Is the provincially Endangered Little Brown Myotis (*Myotis lucifugus*) present? Response acceptable, that is, Little Brown Myotis could be present in the 14 Mile Creek valley and that no suitable habitat for hibernacula exist on the sites. (matrix comment #41)
- iv. Re: “Rare vegetation” (page 90) – See comments above on Sect. 4.3.2; two communities may have status. Was the Great Lakes Conservation Blueprint for Terrestrial Biodiversity also reviewed? Response acceptable. (matrix comment #41)
- v. Re: “Mink and otter feeding /denning sites” (page 91) – Clarify why the habitat along 14 Mile Creek is not favourable for Mink. Mink could occasionally occur along 14 Mile Creek but given the lack of records and isolated nature of the valley, along with its deciduous cover, they likely do not occur on the frequency level to trigger SWH. (matrix comment #41)

- vi. Re: "Waterfowl nesting habitat" (page 91) – This criterion belongs under the "Seasonal Concentration Areas" group, not the "Rare Vegetation Communities or Specialized Habitats for Wildlife" Group. [Response acceptable.](#) (matrix comment #41)
- vii. Re: "Waterfowl staging areas" (page 91) – This criterion belongs under the "Seasonal Concentration Areas" group, not the "Rare Vegetation Communities or Specialized Habitats for Wildlife" Group. [Response acceptable.](#) (matrix comment #41)
- viii. Re: "Raptor hunting areas" (page 92) – "Raptor Wintering Areas" is already discussed on page 89. We note there is a SWHTG criterion "Raptor Nesting Habitat" under the "Rare Vegetation Communities or Specialized Habitats for Wildlife" group. There were no nest records since 1983 but apparently no additional surveys were conducted. Nesting Long-eared owls are not easy to find. According to the ROM's Breeding Birds of Ontario (1983) only 73 nests had been documented in the province (as of 1983). [The Cooper's Hawk nest, outside of the TPA, does likely not constitute SWH. We do stand behind our comment that species such as Long-eared Owl are very hard to find nesting, so the level of nest searching in portions of the TPA were likely not detailed enough to find this species if it were nesting.](#) (matrix comment #41)
- ix. Re: "Sites supporting area-sensitive forest species" (page 92) Given the status of larger forested sites features in Oakville, we would agree this is SWH. Suitable buffers are required to protect this habitat. Note: a similar criterion is discussed on page 95 but not considered SWH? [Response acceptable.](#) (matrix comment #41)
- x. Re: "Woodland amphibian breeding ponds" (page 93) – Non-forested breeding ponds should be considered as there are at least nine ponds present outside the valleylands. [Agreed that the number and diversity of amphibians detected in the dug out ponds in the golf course would not constitute SWH.](#) (matrix comment #41)
- xi. Re: "Turtle nesting areas" (page 93) – This should include turtle nesting habitat and overwintering areas; in the Oakville planning area (which would be the area for which SWH is evaluated) most turtle habitat (away from the rivers and creeks) is likely related to dug ponds. Turtle populations, especially near urban areas, are declining due to the cumulative impacts of habitat loss and increased road mortality. We are not convinced that adequate surveys have been conducted to date to identify turtle nesting areas. [Given the habitats surrounding these dug out ponds, it is not likely that turtles are breeding in significant numbers. Turtle surveys in 2013 did search for evidence of nesting.](#) (matrix comment #41)
- xii. Re: "Seeps and springs" (page 94) – What criteria were used to evaluate whether they would support SWH conditions? [Seeps and springs - response acceptable.](#) (matrix comment #41)
- xiii. Re: "10-1-3 Habitat of Species of Conservation Concern" (page 94) – The criteria contained within this group do not correspond with those in the Significant Wildlife Habitat Technical Guide. As a result, the information is confusing and possibly misleading. The group should have included the following criteria levels:
- o Species identified as Nationally Endangered or Threatened by COSEWIC which are not listed as Endangered or Threatened under Ontario's ESA. This would include Eastern Wood-Pewee and possibly Wood Thrush.

- Species identified as Special Concern or historical in Ontario. Monarch should be discussed.
 - Species that are listed as rare (S1 - S3) or historical in Ontario
 - Species whose populations appear to be experiencing substantial declines in Ontario.
 - Species that have a high percentage of their global population in Ontario and are rare or uncommon in The Regional Municipality of Halton
 - Species that are rare within the Regional Municipality of Halton, even though they may not be provincially rare
 - Species that are subjects of recovery programs
 - Species considered important to The Regional Municipality of Halton, based on recommendations from the Conservation Advisory Committee (e.g. EEAC, ESA studies). Out of sequence - these all respond to our comment 41 xiii (with multiple bullets). xiv. Response acceptable; xv. Response acceptable; xvi. No Wood Thrush were detected within TPA - response acceptable; xvii. Response acceptable (matrix comment 41 xiii. – xvii.) (matrix comment #41)
- xiv. Mis-assigned or repetitive/redundant categories listed under Species of Conservation Concern include: include: Raptors, Area-Sensitive Birds, Grassland Birds, Other Birds, Amphibians, Reptiles, Mammals and Insects; content should be reorganized according to status levels of conservation concern. Listing does cover all categories but alignment with references with regard to order would assist readers. (matrix comment #41)
- xv. Re: “Grassland birds” (page 95) – This criterion is covered as "Habitat for open country and early successional breeding bird species" and should be discussed in the "Rare Vegetation Communities or Specialized Habitats for Wildlife" group. While we agree with the determination, we do not agree that no significant grassland species were recorded; Savannah Sparrow is listed by OMNR as a species that would potentially qualify an area as significant wildlife habitat according to the Ecoregion 7E Criteria Schedule (OMNR, 2012). Although Savannah Sparrow is listed by MNR as a species that could potentially qualify and area as SWH, it must be observed with at least one other listed species. No other listed species have been recorded to date. (matrix comment #41)
- xvi. Re: “Other birds” (page 95) – Although listed as rare in Halton NAI (which would trigger SWH as per page 87 last paragraph), Beacon state that they don’t consider Orchard Oriole to qualify as triggering SWH designation. This exception should be further qualified. Response re: Orchard Oriole - Species is increasing and not dependent on rare or undisturbed habitat, response acceptable. (matrix comment #41)
- xvii. Swamp Spreadwing should be discussed under the S1 - S3 criterion. Swamp Spreadwing is discussed accordingly in report. (matrix comment #41)
- xviii. The rationalization that there are better examples of Snapping Turtle Habitat would imply that the current study area has been fully documented for this species, and that no habitat outside of the major and minor river valleys should be considered. According to John Boos (Peterborough OMNR), all Snapping Turtle nests are considered SWH by OMNR. Agreed that MNR recommends that non-natural sites not be considered

SWH and that final SWH determination rests with the planning authority. However, turtle populations, which are under considerable threat and continue to decline, remain poorly protected in urban areas. Turtles do not have many 'natural' sites available and simply select what is most suitable, regardless of its artificial status. A better strategy to protect turtle populations is necessary. The MNR Ecoregion 7E Criterion Schedule considers a single Snapping Turtle nest SWH. (matrix comment #41)

- xix. Milksnake is considered a secondary target species in the Great Lakes Conservation Blueprint for Terrestrial Biodiversity for Ecodistrict 7E-4 (Henson & Brodribb, 2005). A secondary target is defined as an element of biodiversity (species or vegetation community) that is of some conservation concern in the Ontario portion of the Great Lakes. Occurrences of secondary biodiversity targets were included in the Conservation Blueprint portfolio where their occurrence coincided with a primary target occurrence, a protected area, or conservation lands. Response acceptable (comment noted). (matrix comment #41)
- xx. Re: Animal Movement Corridors – Although this criterion is listed on page 87, it is not discussed in Table 15. Existing Animal Movement Corridors should be mapped and described. Table 16 has been updated with a response regarding SWH for animal movement corridors. Agreed that 14 Mile Creek valley is currently cut off at both ends by Upper Middle Road and the QEW and is likely limited as an animal movement corridor. (matrix comment #41)
- xxi. Re: Table 16 (page 98) – “Turtle nesting habitat and overwintering areas” may warrant SWH status in Table 16. Fourteen Mile Creek and associated tributaries likely merit designation as SWH as Animal Movement Corridors. In a context such as the TPA, identifying potential animal corridors using aerial photography is appropriate. The generalized movement corridors indicated on Figure 15 seem appropriate. More work would need to be undertaken to establish if SWH for animal movement corridors exist; however, given the nature of the site, with barriers to movement at many areas, it may not exceed thresholds (that do not currently exist) for SWH. (matrix comment #41)
- 4.3.11 Environmentally Sensitive Areas Assessment (page 99)
- i. Re: last paragraph on page 100 and Figure 14 – It is not clear why some features were included in the proposed ESA boundary and others were excluded. Each area where the existing ESA boundary differs from the proposed boundary should be discussed, perhaps in a corresponding table. For example it is not clear why vegetation polygons 2q, 2r, parts of 2u, 12, 37, 39b, and 39c were excluded. Update in report regarding delineation of ESA seems reasonable and acceptable. (matrix comment #42)
- 4.3.11.1 Bronte Creek Valley ESA (ESA #10) (page 104)
- i. Table 19 – The table heading is incorrect; it speaks to Bronte Creek Valley ESA #10, not Fourteen Mile Creek ESA #12. Item corrected in Phase 2 report - response accepted. (matrix comment #43)

- ii. Re: Primary Criteria 6 in Table 19 (pg. 104) – Why isn't Swamp Spreadwing (S3) mentioned? Swamp Spreadwing did not occur within the ESA, so not captured in Table 19 - response acceptable. (matrix comment #43)
- 4.3.11.2 Fourteen Mile Creek Valley ESA (ESA #12) (page 105)
- i. Primary Criterion 6 in Table 20 (pg. 107) – Given the information available, the ESA likely provides habitat for Snapping Turtle (Special Concern) and possibly Milksnake (Special Concern and S3). The proposed boundary on Fig. 14 does not reflect the Redside Dace habitat as mapped on Figure 16. Item corrected in Phase 2 report - response accepted. (matrix comment #44)
 - ii. Primary Criterion 9 (significant groundwater discharge) and 10 (groundwater quality) may apply given the presence of cool/coldwater reaches and habitat for Endangered Redside Dace, a species reliant on these conditions. Swamp Spreadwing did not occur within the ESA, so not captured in Table 19 - response acceptable. (matrix comment #44)
- 4.3.12 Natural Heritage System (page 108)
- i. Restoration/Enhancement Areas (pg. 109) – Vegetation unit 12 (i.e. field surrounded by forest) is not identified as a possible restoration/enhancement area, yet if reforested it would result in a significant increase in forest interior habitat, contributing to habitat for area-sensitive forest breeding birds which is was one of the SWH criteria applicable to the 14 Mile Creek valley. Restoration/enhancement areas 1, 2 and 3 are located very close to vegetation unit 12, and areas 2 and 3 would be negatively impacted if vegetation unit 12 was developed. Response inadequate. Section 4.3.12.3 continues to exclude vegetation unit 12 as a key restoration or enhancement area. The value this unit could provide, if restored, is not acknowledged or addressed. The EIS should provide rationale for why it (and any others) were not considered. (matrix comment #45)
 - ii. Figure 15 – Vegetation polygons 2q, 2r, 2u, 2v, 37, 39b and 39c should be discussed re: potential restoration/enhancement areas. Revised response: Response not acceptable. As per paragraph 3 on page 150 of the Phase 2 EIS, restoration/enhancement areas are part of the NHS. The selection of restoration/enhancement areas requires greater clarity, especially how one is ranked vs. another. (matrix comment #45)
- 5.2 Natural Heritage Constraints to Development (page 112)
- i. Figure 16 - The buffers and setbacks applied to derive Constraints to Development are exclusively feature-based. 7.1.4 of the Terms of Reference does advocate a feature-based identification of constraints, however Section 4.3.12 of the most current report says “This EIS has adopted as systems based approach to establish an NHS for the TPA.” Clarification is requested. (matrix comment #46)
 - ii. The section does not discuss 120 m Adjacent Lands where future development may interfere with the natural heritage system and its functions, such as functions represented by Significant Wildlife Habitat. Examples of broader functions would include:

- The relationship between potential owl roosting sites and adjacent open lands as foraging habitat should be addressed in the development constraints.
 - Protection of locally occurring turtle species, including Snapping Turtle, needs to address overwintering/foraging habitat, as well as nesting habitat and the overland connections that exist between them. Without this consideration there is no realistic expectation that these species will persist in the local landscape in the future.
 - Local frog populations (especially Spring Peeper) are reliant on upland forest as well as pools/ponds; need to consider how the necessary connections that exist will be protected as constraints. 7.1.4 of the Terms of Reference does advocate a feature-based identification of constraints. Therefore, response acceptable. (matrix comment #46)
- iii. Given two Milksnake observations, more cover board surveys and a more comprehensive evaluation of critical habitat is warranted. Hibernacula are sometimes very difficult to identify. In recognition of this limitation, it would be appropriate to discuss how the constraint approach addresses this and similar species reliant on a range of cover conditions. More snake surveys were conducted in 2013, and no potential hibernacula were found. Response acceptable. (matrix comment #46)
- iv. Animal Movement Corridor is another criterion that merits consideration under SWH and constraints. Ecological functions need to be considered and appropriately reflected on constraint mapping. NHS does cover potential animal movement corridors, and it is discussed in Table 16 (SWH). Response acceptable. (matrix comment #46)

Appendix C – Vascular Plant List

- i. Are S-ranks current? We note that this list uses the old S-rank system (e.g. non-native species are SE# instead of SNA). Appendix C was updated accordingly. (matrix comment #47)

Appendix D – List of Rare and Uncommon Plants Recorded in the Tertiary Planning Area

- i. Note typo in the Scientific Name for Slender Sedge Typo corrected. (matrix comment #48)

Appendix E – List of breeding birds recorded in TPA

- i. This appendix requires a legend to define all of the codes used, and a reference list to match with the superscripts (1 through 10). Appropriate legend added to Appendix E. (matrix comment #49)
- ii. For column 12, “B” and “NB” are not defined. Ibid. (matrix comment #49)
- iii. Do the numbers indicated for various species for the three properties refer to the total number of birds seen, or pairs? There should be some indication of whether it refers to singing males, fledged young, etc., as well as the level of breeding evidence recorded (i.e. possible, probable, confirmed). Ibid. (matrix comment #49)
- iv. For the Third Line lands, Yellow-bellied Sapsucker is listed as “B”, which presumably means breeding. However, the text on page 66 says that it is likely a late migrant; please clarify. Explanation re: Yellow-bellied Sapsucker acceptable. (matrix comment #49)
- v. It would be helpful to include the field notes in an appendix to add detail (e.g. timing, weather conditions etc.) regarding the site visits. Also, it would be helpful to know where

the species were observed (i.e. referenced according to ELC polygon). [See response to comment #25.](#) (matrix comment #49)

- vi. Eastern Wood-Pewee should be listed as Special Concern in Canada, and Wood Thrush should be listed as Threatened in Canada. [Table updated appropriately regarding Eastern Wood-Pewee and Wood Thrush.](#) (matrix comment #49)

Appendix G – List of non-avian wildlife recorded in TPA

- i. On page 69, Dekay's Brownsnake is listed for the Third Line lands (NRSI 2012), yet it does not appear in this appendix (only for Geomatics 1993). [Appendix G updated to show Dekay's Brownsnake.](#) (matrix comment #50)
- ii. It would be helpful to include field notes in an appendix to confirm the details (e.g. timing, weather conditions etc.) regarding the site visits. Also, it would be helpful to know where the species were observed (i.e. on a map or referenced according to ELC polygon). The ELC data cards were provided in the appendix. [Appendix G updated; see response to comment #25.](#) (matrix comment #50)

Phase 2 EIS Comments on New or Revised Material

Aquatic Resources

4.3.9.4 Thermal Regimes

- i. Page 114, Figure 12b - The points in the legend appear to be all the same colour. Also, the figure caption should stipulate that this is dealing with the east and west forks of the east branch of Fourteen Mile Creek.

4.3.9.4.1 2013 Water Temperature Data

- i. The temperature regime classifications in the text are not consistent with those used in Figures 13a-13c. However, it is generally understood what is meant with the figures, as the inconsistency appears to be a simple naming error that has been repeated.
- ii. Page 116, last paragraph - Again, there seems to be some confusion with the temperature class nomenclature.

4.3.10.1 Significant Habitat of Endangered Species and Threatened Species

- i. Page 122, watercourses falling into the habitat regulations - 14W should be added to the list attached to 3. West Branch of Fourteen Mile Creek (14W, 14W-E1, 14W-M1, 14W-W1).

4.3.11.2 Fourteen Mile Creek Valley ESA (ESA #12) (page 105)

- i. Table 21, primary criteria #9 (page 146) - If the proposed ESA boundary is adopted, which includes the short section of 14 mile Creek upstream of Upper Middle Road, then the ESA will include a significant groundwater discharge area. I strongly support this inclusion, as it would capture in the ESA the most important source of baseflow to this portion of Fourteen Mile Creek, which is critical in maintaining the Redside Dace habitat in this area.

5.1 Physical Constraints to Development

- ii. Page 155, Table 22 - Agree that first item in the table is essential in reducing the potential disruption to adjacent Redside Dace habitat.

6.4 Servicing

Page 169, treatment train approach to SWM. Noted.

6.5 Water Supply

Page 170, watercourse crossing done with trenchless methods. Crossing at road crossing of 14W-W1. Noted.

6.6 Sanitary Collection System

Page 170, no crossings of the NHS proposed. Noted.

6.7 Stormwater Management

Pages 171 and 172 - No increases in flows up to the Regional Storm event, 80% suspended solids removal, and bottom draw pipes and other measures will be implemented to mitigate thermal impacts to protect Redside Dace. Noted.

7.0 Impact Assessment and Mitigation - Table 24 starting on page 176. Lots of good plans in place to minimize impacts to Fourteen Mile Creek. The following are concerns/clarifications.

- i. Page 183. My understanding of the road crossing of 14W-W1 is that it will be upstream of direct fish habitat and Redside Dace habitat. Please confirm and modify text to indicate that this is the case.
- ii. Page 184. Last bullet under the "Recommended Mitigation" column in the "Redside Dace" row, suggests that restoration and naturalization is planned for Tributary 14W-W1. Please confirm that this will be for the upstream sections considered contributing fish habitat, and not the downstream sections (Reaches SW1 and SW2) considered Redside Dace recovery habitat.
- iii. Page 185. Under the "Recommended Mitigation" column in the "SWM Facility and Storm Outfalls" row, it is suggested that there are requirements of maximum temperature and dissolved oxygen for discharge to Redside Dace habitat. While we agree with the importance of constructing SWM facilities to mitigate thermal impacts to Redside Dace habitat, how is it possible to ensure, given that these are passive cooling systems, that these temperature limits will never be exceeded?

7.1 Evaluation of Preferred Land Use Options - Agree with Option B as preferred. This option will provide a greater separation between Fourteen Mile Creek and urban development on the east side of the creek in the Brey's Lane area.

8.0 Monitoring Program - Terms of Reference.

- i. Table 25, Page 190 - Under Aquatic Resources (can also be related to Groundwater Resources on page 189) there should be a requirement for the mapping of groundwater seeps and springs, watercress, skunk cabbage, and other observations/indicators of groundwater inputs to Fourteen Mile Creek and its tributaries within the study area. This mapping should be undertaken at similar periods over two years prior to construction. This will indicate the actual pattern of groundwater inputs to the creek system. Potential changes to this pattern will help connect the results of groundwater monitoring to potential impacts to aquatic habitat.

9.0 Policy Compliance

- i. Page 192, Table 26, Endangered Species Act - It should be noted that the proposed road crossing will be in contributing Redside Dace habitat.

Terrestrial Resources

6.1 Description of the Proposed Development (page 162)

- i. It is unclear how these three options were developed, other than the statement that they were developed to offer a balanced mix of employment and residential uses at varying densities to serve the needs of the local populations. Why were only 3 options considered in the evaluation? Placement of SWM ponds could benefit from a more strategic assessment based on benefits to NHS (e.g. linkages and buffers).
- ii. Although the farm field on the Saw-Whet property may not be environmentally constrained in its own right, it's an obvious restoration and enhancement area given its local context (i.e. it is almost entirely surrounded by core areas of the proposed Natural Heritage System). In fact, it should have been considered for inclusion in the NHS. Its omission is confusing. Why is this area "yet to be determined"? We recommend a long list of restoration and enhancement areas be prepared (including the farm field), showing how they were screened for restoration and enhancement opportunities. Restoration of the farm field could significantly increase available habitat for area-sensitive birds. Please refer to the Great Lakes Factsheet: *Forest Birds in Urban Areas: Habitat Needs of Area-Sensitive Species* http://publications.gc.ca/collections/collection_2009/ec/CW66-260-2006E.pdf.
- iii. Figures – Option A, B & C: NHS boundary should be included on mapping.

6.3 Preliminary Grading Requirements (page 168)

- i. Earthworks and the corresponding removal of vegetative cover need to be compliant with the federal Migratory Birds Convention Act (MBCA). Section 6 of the Migratory Birds Regulations (MBRs) made under the 1994 MBCA makes it an offence to "disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird." Environment Canada normally recommends restrictions on vegetation clearing during the core breeding period, which generally correspond to the beginning of May through to the end of July. The EIS should provide direction on avoiding conflict with the MBCA. It is noted that this issue was raised in the Impact Assessment Matrix (page 183).

7.0 Impact Assessment and Mitigation - Table 24 starting on page 176.

- i. Water Balance – it would be desirable that monthly modeling of water balance be provide to assess potential changes that may affect key biota and wetlands.
- ii. Woodlands (page 180) – Discussion of potential impacts and recommended mitigation is good, however there is no mention of the property marked TBD on mapping. Due to the location of this property within the wooded feature there should be discussion of impacts and mitigation in relation to future uses of this area. Restoring this area as part of the larger wooded block could contribute to the quality of the larger natural feature and avoid negative impacts that could occur from development in this area. Also see comment 6.1ii.

- iii. Birds (page 183) – Text suggest that forest species will be unaffected. However, we are concerned that the 10 m minimum buffers recommended for woodlands may not be sufficient to protect forest breeding birds? Also see comment 6.1ii.
- iv. Birds (page 183) – We support the recommendation to undertake vegetation clearing outside the breeding season.
- v. Reptiles (page 183) – A more definitive commitment to compensate for lost turtle foraging and overwintering habitat should be made, not just recommendations. Suggested approach in EIS may not result in an overall neutral impact. It is acknowledged that SWM ponds can provide additional habitat but they are also known to pass along contaminants. Turtle nesting habitat is not mentioned.
- vi. Reptiles (page 183) – Concerns remain that despite recommending pond removal take place in late summer/early fall that turtles will be negatively impacted. Construction plans should ensure that all turtles discovered during the draining of the ponds are rescued and transported to suitable alternative ponds. Permits will be required to handle turtles.
- vii. Amphibians (page 183) – Concerns remain that despite recommending pond removal take place between late summer and early February that frogs and toads will be negatively impacted. Construction plans should ensure that all amphibians discovered during the draining of the ponds are rescued and transported to suitable alternative ponds. Permits will be required to handle amphibians.
- viii. Species at Risk (page 184) – If possible, replacement nest structures for Barn Swallows should be located within the TPA.

7.1 Evaluation of Preferred Land Use Options (page 187)

- i. It would be useful if a matrix was provided that reviewed how each of the options address or don't address key NHS protection issues.
- ii. It appears that Option B does result in the most area being retained in Open Space.

8.0 Monitoring Program – Terms of Reference (page 188)

- i. Breeding Bird Species (Table 25, Page 190) – Unless previous bird survey work was specifically conducted in such a way that point count stations can be integrated in a monitoring program, new stations will need to be surveyed pre-development.
- ii. Breeding Bird Species (Table 25, Page 190) – the reference to the *Amphibian and Reptile Protection Plan* is confusing.
- iii. Amphibians/Turtles and condition of created habitats (Table 25, Page 190) – Assuming newly created ponds are constructed prior to the initiation of development (requires to support any rescued amphibians or turtles), it is unclear why baseline conditions should not be established.
- iv. Amphibians/Turtles and condition of created habitats (Table 25, Page 190) – Clarification is requested as to what the *Amphibian and Reptile Protection Plan* is.
- v. Wildlife Movement (Table 25, Page 190) – It is unclear how long cameras will be collecting data during each of the monitoring periods (i.e. pre-, during and post-development). Will the cameras be functional for one night, one month or other length of time?

Conclusions

Overall, the Phase 2 EIS represents a significant improvement in content and clarity. The vast majority of issues raised in the Phase 1 EIS have been adequately addressed. Nevertheless, a few minor issues remain and a few others have been added. The consideration of Restoration & Enhancement Areas, as well as Land Use Options, is not as transparent as would be desirable.

Sincerely,



Jim Dougan
Dougan & Associates
jdougan@dougan.ca



George A. Coker
C. Portt and Associates
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4. Hydrogeology

January 22, 2015
Ref No. TP113015.4000



Town of Oakville
c/o Planning Services
1225 Trafalgar Road
Oakville, ON L6H 0H3

ATTENTION: Mr. Kirk Biggar MCIP, RPP, Senior Planner, Long Planning
Planning Services

Dear Sir,

**Re: Peer Review of Hydrogeological Study, Merton Tertiary Planning Area, R.J.
Burnside & Associates**

Amec Foster Wheeler, is pleased to provide the Town of Oakville with peer review comments on the hydrogeological study for the Merton (QEW/Bronte Road) Tertiary Planning Study. The peer review has considered the following documents:

- The Merton (QEW/Bronte Road) Tertiary Planning Study Terms of Reference dated February 15, 2013;
- Preliminary hydrogeology report prepared by R.J. Burnside & Associates Limited titled "Hydrogeological Study, Merton Tertiary Planning Area, Town of Oakville, Ontario" dated March, 2013;
- A review of the preliminary Burnside report by AMEC dated April 16, 2013;
- A review of the preliminary Burnside report by Conservation Halton (CH) dated 28 July, 2013, CH File MPR 640;
- A revised hydrogeology report prepared by R.J. Burnside & Associates Limited titled "Hydrogeological Study, Merton Tertiary Planning Area, Town of Oakville, Ontario" dated December, 2013;
- A follow-up review of the revised Burnside report by AMEC dated January 20, 2014
- A revised hydrogeology report prepared by R.J. Burnside & Associates Limited titled "Hydrogeological Study, Merton Tertiary Planning Area, Town of Oakville, Ontario" dated October, 2014; and
- A consolidated response matrix that was provided by the proponents in December 2014, that included R.J. Burnside & Associates responses to AMEC's review dated April, 2013.

In addition there have been a number joint meetings at the Town of Oakville organized by the Town's Planning department during the review process where the outstanding issues have been discussed with R.J. Burnside & Associates and Conservation Halton Staff.

Continued...

We can conclude that the comments raised by Amec Foster Wheeler in April, 2013 related to hydrogeology have been satisfactorily addressed. However it is noted that some of the comments were addressed as actions to be undertaken at a future date when the site-specific details for redevelopment have progressed further including:

- Site investigation of the Deerfield Golf Course (on the assumption that this land is actually redeveloped);
- Identification of areas where a high water table may be present and flooding of basements may be a concern; and
- Mapping the overburden cover particularly with respect to the areas that potentially provide higher recharge to groundwater and therefore are potentially important for preserving the baseflow in the creek.

These recommendations should be considered for the water management strategy of the Tertiary Plan depending on the land use options determined for the Tertiary Plan.


Yours truly,

Amec Foster Wheeler Environment & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited

Prepared by:



Martin Shepley, D.Phil., M.Sc., P.Geo.
Associate Hydrogeologist



Reviewed by:
Simon Gautrey, M.Sc., MBA, P.Geo.
Senior Associate Hydrogeologist

DRAFT

5. Stream Morphology



January 23, 2015

Mr. Ron Scheckenberger
AMEC Environment and Infrastructure
3215 North Service Road
Burlington, ON
L7N 3G2

**RE: DRAFT: Technical Review #3 - Merton Tertiary Planning Study
Fluvial Geomorphology Component
Oakville, ON
Project No. 13081.454**

This letter provides a summary of the review of the *Merton Tertiary Planning Study: Geomorphic Assessment – Fourteen Mile Creek and Associated Tributaries Final Report V-1* (PARISH Geomorphic Ltd., October 2014). The Geomorphic Assessment and its appendices were reviewed in their entirety. Additional review was conducted on the June 3, 2014 letter *Erosion Threshold Calculations for Merton Tertiary Plan Study* (Attachment B) and the November 29, 2013 letter *Erosion Analysis for Merton Tertiary Planning Study – Advanced Servicing Plan* (Area Servicing Plan revised October 2014, Appendix H). No other materials related to other technical disciplines were reviewed.

The Merton Tertiary Planning Study Area is identified as an area for potential future development within the Town of Oakville, Ontario. On October 16, 2012, the Town approved the development of a Tertiary Plan that will identify land use designations and policies for the entire study area. In support of the Tertiary Planning Study, PARISH Geomorphic undertook a geomorphic assessment of Fourteen Mile Creek and its associated tributaries (PARISH Geomorphic Ltd., February 2013). GHD was retained to provide a technical review of the submission on behalf of the Town and Technical Review #1 was provided. A second review of the finalized *Merton Tertiary Planning Study: Geomorphic Assessment – Fourteen Mile Creek and Associated Tributaries* (PARISH Geomorphic Ltd., December 2013) was provided in Technical Review #2.

The purpose of Technical Report #3 is to provide a review of the updated *Merton Tertiary Planning Study: Geomorphic Assessment – Fourteen Mile Creek and Associated Tributaries Final Report V-1* (PARISH Geomorphic Ltd., October 2014). To provide context for this technical review, the summarized comments from Technical Review #2 and are provided below in *italicized* text. Additional comments related to the October 2014 report are summarized in standard text.

1. *Additional justification for the exclusion of the eastern tributaries from the geomorphic assessment;*

The updated report contains additional information on two of the eastern tributaries defined as Reaches R75a-1, R75a-2 and Reach 8. RGA and RSAT results were provided following standard protocols as well as general descriptions of each reach. However, the watercourse layer on the reach map (Figure 3.1) shows two other eastern tributaries joining the main channel at the reach break between Reach 73 and Reach R74a. No information on these tributaries or justification for excluding these tributaries was provided. Justification for excluding these tributaries should be provided.



2. Identification of confined and unconfined reaches;

The updated report now contains a description of the Provincial Policy Statement 3.1.1 (b) (PPS) and how it was used to delineate the erosion hazard limit. Reaches were identified as confined and unconfined, and the associated methods were used to determine the erosion hazard limits.

We agree with the approach in determining that the toe erosion allowance should be between 2 – 5 m as defined in Table 4.1 following the PPS. However the choice of 3 m for the toe erosion allowance from the range of 2 – 5 m was not explained or justified. Justification for the 3 m toe erosion allowance should be provided.

The erosion hazard limit was determined for all reaches except for the newly added Reach 8 and the eastern watercourses shown at the confluence to Reach 73 and Reach R74a. It was not clear why these reaches were excluded from the hazard assessment. Justification for excluding these reaches from the erosion hazard assessment should be provided.

3. Clarification that the lateral extent of the meander belt width plus Redside Dace setback does not represent the erosion hazard limit;

As described above, the hazard assessment was further broken down into confined and unconfined reaches. A meander belt width was determined for all reaches, including the confined reaches in order to determine the Redside Dace habitat delineation. This follows the approach as outlined in the Endangered Species Act (2007). It was clarified that the Redside Dace habitat delineation did not represent the erosion hazard limit.

Table 4.2 presents a Preliminary Meander belt Width, Factor of Safety, and Preliminary Belt Width + Redside Dace Setback. The Factor of Safety does not seem to be included in the Preliminary Belt Width + Redside Dace Setback unless it is already included in the Preliminary Meander belt Width. This should be clarified.

4. Rationale for the location of detailed geomorphic field sites;

An acceptable rationale was provided for the location of the detailed geomorphic field sites.

5. Tablature summary of relevant bankfull channel characteristics from the rapid assessment work on a reach basis;

This was included in a new Appendix E: Geomorphic Reach Descriptions.

6. Justification for the exclusion of Reach 74a in the selection of detailed data collection sites;

Justification was provided for the exclusion of Reach 74a.

7. Provision of critical depths associated with the critical flows identified for detailed field sites;

Critical depths associated with the critical flows were provided for the detailed sites.

8. Provision of detailed erosion threshold analyses and a clear recommendation with respect to the governing erosion threshold for each detailed field site;



Sufficient additional information was provided within the report and within Attachment B concerning the erosion threshold analysis. The recommendation of employing both the bed and bank thresholds was unusual particularly given the large range in values for each site. In addition, the bed threshold was determined to be greater than the bankfull discharge for two of the sites, which arguably has limited application to an exceedance analysis. Clarification on which threshold should be the governing threshold for the evaluation of stormwater management targets should be provided.

9. *Field confirmation of erosion thresholds is recommended.*

Field confirmation of the erosion thresholds was not provided. It was stated that this work was not part of the scope of study. Field confirmation of erosion thresholds could be used to determine how conservative the thresholds are if the erosion exceedance is deemed too high.

Erosion Exceedance Analysis

A review of the June 3, 2014 letter *Erosion Threshold Calculations for Merton Tertiary Plan Study* (Attachment B) and the November 29, 2013 letter *Erosion Analysis for Merton Tertiary Planning Study – Advanced Servicing Plan* (Area Servicing Plan revised October 2014, Appendix H) was conducted given that sufficient information has now been provided to review the erosion thresholds.

1. It was unclear how the “average percent change in threshold exceedance” presented in Table 2 (Appendix H) was determined. It appears that this is a comparison of exceedance times (the total amount of time the discharge exceeds the erosion threshold). As such, only the total exceedance time would have been compared between the pre and post conditions. It is not clear how an ‘average’ was determined. Additional information on how the “average percent change in threshold exceedance” was determined should be provided.
2. Table 3 (Appendix H) presented “Percent change of the cumulative erosion index for pre- and post-development conditions”. Average and maximum values were provided for the percent change of the cumulative erosion index for the pre- and post- development conditions. It is not clear how these were determined since the cumulative erosion index is, by definition, one value representing the total discharge above the erosion threshold. Information on how the average and maximum cumulative erosion index were determined will need to be provided to allow the evaluation of the exceedance results. Formulas used to calculate the average and maximum values should be provided.
3. Given the stated increase in exceedance time between pre- and post- development conditions, it is recommended that an additional parameter such as cumulative effective work index, be provided to quantify the excess potential energy.
4. Provision of hydrographs for sample events showing the pre- and post- discharge along with the erosion thresholds would allow for easier interpretation and evaluation of the exceedance results. It is recommended that hydrographs for sample events are provided for the pre- and post-discharge to provide context for the exceedance results.



We trust that the information provided in this letter meets your requirements at this time. Should you require further clarification regarding this review, please do not hesitate to contact the undersigned.

Respectfully submitted,

Jeffrey Doucette, Ph.D.
Coastal and River Scientist

Abraham J. Barrios, P.Eng.
Senior Water Resources Engineer

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6. Transportation

January 09, 2015
Ref No. TP113015.4000



Town of Oakville
c/o Planning Services
1225 Trafalgar Road
Oakville, ON L6H 0H3

ATTENTION: Mr. Kirk Biggar MCIP, RPP, Senior Planner Long Planning, Planning Services

Dear Sir,

RE: Peer Review of Transportation Study, Merton Tertiary Planning Area, Read, Voorhees & Associates (RVA) Toronto, Ontario – Third Review

CIMA as part of the Amec Foster Wheeler Peer Review Team hereby provides the Town of Oakville (Town), the third review of the Transportation Study for the Merton (QEW/Bronte Road) Tertiary Planning Area prepared by Read, Voorhees & Associates (RVA).

In the second review, the report entitled "Traffic Impact Study Merton Tertiary Plan Oakville" dated December, 2013 prepared by RVA was reviewed by the CIMA team and a list of comments was provided. In response to CIMA's comments, RVA has provided an updated version of the report, dated September 2014 with a detailed response matrix.

CIMA undertook a detailed review of the updated report and the response matrix in light of our comments. **All our comments have been addressed and we do not have any further comments.** The following updates were noted:

- Synchro Analysis of additional intersections recommended for analysis in the previous reviews including relevant updates within the report
- Revised figures showing the traffic volumes of additional intersections

The report includes a review of the impacts on QEW ramps on Third Line and Bronte Road, which comes under the jurisdiction of the Ministry of Transportation Ontario (MTO). We are not aware whether or not MTO undertook a review of the potential impacts of the development on these ramps.

Continued...

It should be noted that the objective of the current study does not cover detailed analyses in some areas, which are otherwise required according to the North Oakville Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies (North Oakville Guidelines). These areas include transit impacts including transit market potential estimation, cycling and pedestrian facilities analyses, access geometrics, safety analysis, etc. We are assuming that this level of analysis will be undertaken as part of each specific development plan within the Merton Tertiary Planning Study Area.

Some Synchro Reports for existing conditions (Third Line and EB Off-Ramp, Third Line and WB-Off-Ramp, Third Line and Glenridge Circle, Third Line and Glen Abbey) appear to be missing in the Technical Appendix, which should be included in the final report.

Closure

If you have any questions, please contact either of the undersigned at 289-288-0287.

Yours truly,

CIMA Canada Inc.
3027 Harvester Road, Suite 400
Burlington, ON

Prepared by:

Sheetal Thukral, P. Eng. M. Eng.

Reviewed by:

Dr. Jaime Garcia, P. Eng., Ph.D

DRAFT

7. Archaeology/Cultural Heritage



amec
foster
wheeler

January 22, 2014
TP113015.5000

Town of Oakville
c/o Planning Services
1225 Trafalgar Road
Oakville, ON L6H 0H3

Attention: Mr. Kirk Biggar MCIP, RPP, Senior Planner, Long Planning,
Planning Services

Dear Sir,

Re: Peer Review of Original Report for: *Stage 2 Archaeological Assessment Proposed Bronte Green Subdivision. 1401 Bronte Road, Part of Lots 28, 29 & 30, Concession 2 (Geographic Township of Trafalgar South, County of Halton), Town of Oakville, Regional Municipality of Halton (AMICK Consultants Limited)*; and, Supplementary Package for: *Stage 1 Archaeological Background Study Proposed Bronte Green Subdivision. 1401 Bronte Road, Part of Lots 28, 29 & 30, Concession 2 (Geographic Township of Trafalgar South, County of Halton), Town of Oakville, Regional Municipality of Halton (AMICK Consultants Limited)*

Amec Foster Wheeler Environment & Infrastructure hereby provides the Town of Oakville with a peer review of the original report, dated May 7, 2014, entitled: *Stage 2 Archaeological Assessment Proposed Bronte Green Subdivision. 1401 Bronte Road, Part of Lots 28, 29 & 30, Concession 2 (Geographic Township of Trafalgar South, County of Halton), Town of Oakville, Regional Municipality of Halton*. In addition, we provide a peer review of the supplementary package, dated February 24, 2014, entitled: *Stage 1 Archaeological Background Study Proposed Bronte Green Subdivision. 1401 Bronte Road, Part of Lots 28, 29 & 30, Concession 2 (Geographic Township of Trafalgar South, County of Halton), Town of Oakville, Regional Municipality of Halton*.

It should be noted that Amec Foster Wheeler was not provided with the original Stage 1 report for the detailed assessment of Part Lots 28–30, which would have accompanied the supplementary package cited above.

The Stage 2 study area (Part of Lots 28–30, Concession II SDS) is a subset of the Stage 1 study area (Part of Lots 26, 27, 28, 29, 30 & 31, Concession II, SDS) examined by AMICK Consultants Ltd. in 2012. The wider Stage 1 assessment (and the detailed Stage 1 assessment of Part of Lots 28–30 as referenced in the Stage 2 report) concluded that

Continued...

specific portions of Lots 28–30 have archaeological potential and should be subjected to a Stage 2 assessment.

In the preparation of this review, the following municipal guidance document was consulted:

- The Merton (QEW/Bronte Road) Tertiary Planning Study Terms of Reference dated February 15, 2013;

The purpose of this review is to determine if the report for the Stage 2 assessment and the supplementary package for the detailed Stage 1 assessment are compliant with the Ministry of Tourism, Culture and Sport's (MTCS) 2011 Standards and Guideline for Consultant Archaeologists (2011 S&G).

DETAILED REVIEW

Cover Page, Executive Summary, Table of Contents and Project Personnel

As required under the 2011 S&G, the Stage 2 report contains the following introductory components: Project Report Cover Page; Executive Summary; Table of Contents; and Project Personnel. As required under the 2011 S&G, the supplementary package contains all sensitive information related to the detailed Stage 1 assessment of Part of Lots 28–30, comprised of the locations of all previously registered archaeological sites in the study area and surrounding vicinity.

Comments:

The introductory components of the Stage 2 report and their contents are in conformity with the requirements of the 2011 S&G. The cover page (Section 1.0) includes all required information. A concise summary of the assessment is provided in the Executive Summary (Section 2.0). The Table of Contents (Section 3.0) includes all of the requisite headings for a Stage 2 report. The Project Personnel section (Section 4.0) lists all of the necessary information concerning who conducted the assessment.

The Project Personnel page indicates that all work was undertaken under an MTCS Project Information Form issued to a professionally licensed archaeologist. Moreover, professionally licensed archaeologists conducted the fieldwork and prepared the report.

Continued...

Project Context: Development Context, Historical Context, Archaeological Context

As required under the 2011 S&G, the report contains information on Project Context (including Development, Historical and Archaeological Context).

Comments:

The information contained in each of the Project Context sections (Sections 5.0, 5.1., 5.2, 5.3) meets or exceeds MTCS standards.

The Development Context discussion provides all of the information required under the 2011 S&G. It is stated that this work was carried out under the Planning Act (RSO 1990b) in order to support a Draft Plan of Subdivision application and companion Zoning By-law Amendment application as part of the pre-submission process. It goes on to state that all work was conducted in conformity with the 2011 S&G, the Ontario Heritage Act (RSO 1990a) and the Ontario Heritage Amendment Act (SO 2005).

The Stage 2 report refers to recommendations contained in the detailed Stage 1 report, as paraphrased below:

- Background research indicates that a large portion of the property has already been subjected to Stage 2 assessment by means of pedestrian survey. These areas do not require further Stage 2 assessment.
- As a result of the property inspection completed as a component of this study, building footprints, paved parking lots, paved or gravel trails, low lying and wet areas, steep slopes and artificial mounds were found to have low or nonexistent archaeological potential. Consequently no further archaeological assessment of these areas is required.
- Areas not previously assessed and of little or no apparent disturbance will require Stage 2 assessment by means of hand shovel test pits at five metre intervals.
- It is suggested that if development is phased, only Phase 1 need be assessed by test pit survey and the balance can be ploughed and disked in preparation for pedestrian survey once the Saw Whet golf course is no longer in use.
- It is further recommended that select sites previously documented be further investigated through Stage 3 site-specific assessment. These would include Sites AiGw-33, 36, 37, 38 and 56, all of which will first have to be relocated.
- As the majority of the study area is currently in use as a golf course, only those areas of archaeological potential beyond the field of play can be assessed by means of test pit survey. Once the use of the study area as a golf course has ceased, the remaining open fields can be ploughed and disked in preparation for Stage 2 pedestrian survey.

The Historical Context discussion reiterates primary and secondary source information from the two Stage 1 assessments.

Continued...

The Archaeological Context discussion also reiterates information from the two Stage 1 reports, including previously registered historic Euro-Canadian and First Nations archaeological sites within the Stage 2 study area and within a radius of one kilometer. This section also lists all known archaeological assessments that have been completed within a 50-metre radius. The reports for these previous assessments date from 1975, 1977, 2007 and 2014. It is asserted (page 23 of the report) that the 1970s data collection met or exceeded current industry standards and does not need to be redone.

Also under the heading Archaeological Context, the report outlines the general physiography of the study area (soils, drainage patterns, topography and vegetative cover) and discusses areas where archaeological potential is naturally low to non-existent (low lying and wet terrain, excessive slope) or has been removed (by buildings and structural footprints, pavements, or recent deep excavations for infrastructure/landscaping). The extent of previous disturbance was confirmed through the placement of shovel test pits at 10-metre intervals.

This section of the report also discusses the property in terms of the distribution of woodlots open fields and lawn/pasture/meadows, and thus whether a Stage 2 assessment in each location must be carried out by means of pedestrian survey or test pitting.

Field Methods

As required under the 2011 S&G, a section on “Field Methods” (Section 6.0) describes the manner in which the field survey was carried out. Apart from zones of active play on the Saw Whet golf course, areas of archaeological potential were subjected to test pit (Section 6.1) or pedestrian (Section 6.2) survey, as appropriate, at five-metre intervals. As required, the weather conditions on all survey days have been listed, these conditions were suitable for the execution of the fieldwork.

Comments:

The methods used for the field survey and the weather conditions during the survey were in conformity with the requirements of the 2011 S&G.

Record of Finds

As required under the 2011 S&G, all of the data associated with this assessment are listed and the licensee has committed to their safekeeping (Section 7.0).

Comments:

No archaeological resources and no new archaeological sites were encountered during this assessment.

Continued...

Analysis and Conclusions

As required under the 2011 S&G, Analysis and Conclusions have been presented (Section 8.0).

Comments:

The Stage 1 and 2 findings are summarized in Sections 8.1 and 8.4 (sic), respectively.

Recommendations

As required under the 2011 S&G, Recommendations have been made with regard to the need for further archaeological assessment (Section 9.0).

Comments:

The recommendations from the detailed Stage 1 assessment report are reiterated in Section 9.1. The Stage 2 assessment recommendations are presented in Section 9.2 and are repeated verbatim below:

1. No further archaeological assessment of the areas which have been subject to Stage 2 Archaeological Assessment of the study area is warranted;
2. The Provincial interest in archaeological resources with respect to the proposed undertaking has been addressed for the areas which have been subject to Stage 2 Archaeological Assessment;
3. The areas which have been subject to Stage 2 Archaeological Assessment of the proposed undertaking are clear of any archaeological concern;
4. The areas which have not been previously assessed require Stage 2 Archaeological Assessment upon closure of the golf course allowing those areas within the area of play to be assessed. The areas requiring Stage 2 Archaeological Assessment are illustrated in Figure 7 of this report;
5. The Riverside Site (AiGw-33), (AiGw-36), The Stream Bed Site (AiGw-37), The Harmer Site (AiGw-38) and The Three Cluster Site (AiGw-56) are to be re-identified in the field and subjected to Stage 3 Site-specific Assessment. As Stage 2 Property Assessment has not yielded any evidence of these sites, test unit excavations consisting of a minimum of 5 test units will be required in each reported site area;
6. MTCS is requested to review this report and issue a letter of concurrence with these recommendations to AMICK Consultants Limited, the proponent, and the appropriate Approval Authority.

Recommendations 1, 2 and 3 (no further archaeological assessment required) are logically inconsistent with Recommendation 5 (outstanding concerns may exist for the Riverside site [AiGw-33], Site AiGw-36, the Stream Bed site [AiGw-37], the Harmer site [AiGw-38] and the Three Cluster site [AiGw-56] within the areas that were assessed). From the mapping provided, it would appear that evidence of at least the Stream Bed site (AiGw-37), and perhaps also of the Riverside site (AiGw-33), should have been found within two of the pedestrian surveyed fields if those two sites still exist. It is our opinion

Continued...

that, if the consultant failed to re-locate any of the previously registered sites within the assessed areas despite intensive scrutiny at their approximate locations, then those sites are no longer outstanding archaeological concerns for the assessed areas. We would suggest that Recommendations 1, 2 and 3 should be retained, Recommendation 5 should be removed, and that the intention of Recommendation 5 should be incorporated into new wording for Recommendation 4, thus:

Portions of the property that have not been assessed because the golf course is still in operation require Stage 2 archaeological assessment upon closure of the course. These areas are illustrated in Figure 7 of this report. Closure of the course will permit open areas greater than 10 metres in width to be prepared for Stage 2 assessment by being ploughed, disked and then allowed to weather sufficiently to provide for at least 80% surface visibility. Ploughed fields should be subjected to pedestrian survey at five-metre intervals. Any remaining unploughable areas should be shovel tested at five-metre intervals, with the soil contents of each test pit being screened through six-millimetre mesh to facilitate artifact recovery. Regardless of the strategy employed, it should conform to the MTCS Standards and Guidelines for Consultant Archaeologists (2011). Careful attention should be given to re-locating the Riverside site (AiGw-33), Site AiGw-36, the Stream Bed site (AiGw-37), the Harmer site (AiGw-38) and the Three Cluster site (AiGw-56). In the approximate locations of each of these sites, the spacing used for pedestrian or test pit survey should be reduced from five metres to two metres over a radius of 30 metres.

Advice on Compliance with Legislation, Bibliography and Sources, Maps and Images

As required under the 2011 S&G, the report provides customary advice from the MTCS regarding the legal responsibilities of the proponent(s) (Section 10.0), and lists the literature, photographs and images that were consulted in the preparation of the report (Sections 10.0, 11.0 and 12.0 and 13.0, respectively).

Comments:

These sections are properly presented and their contents meet or exceed MTCS standards.

Adequacy

Overall, this report is well prepared and meets or exceeds the requirements of the MTCS *Standards and Guidelines for Consultant Archaeologists* (2011). However, it is our opinion that the recommendations need to be reworded, as above, to satisfy the Approval

Continued...

Authority and the MTCS that there is no need for further assessment within the assessed portions of the property.

Conclusion

Based on our detailed review of the data and property characteristics presented in this report, Amec Foster Wheeler would have reached the same conclusions as AMICK Consultants Limited. However, Amec Foster Wheeler would have presented slightly altered recommendations in order to avoid a logical inconsistency; the consultant asserts that the assessed areas do not require further assessment, but then also recommends Stage 3 activities for previously registered archaeological sites that may or may not be present within them.

Sources Consulted

Ontario Ministry of Tourism, Culture and Sport
2011 *Standards and Guidelines for Consultant Archaeologists*

Closure

If you have any questions, please contact either of the undersigned at (905) 312-0700.

Yours truly,

Amec Foster Wheeler Environment & Infrastructure
A division of Amec Foster Wheeler Americas Limited

Prepared by:



Shaun Austin, Ph.D.
Associate Archaeologist

Reviewed by:



Linda Axford, MLA, CAHP
Senior Heritage Specialist

DRAFT

8. Noise



amec
foster
wheeler

January 22, 2014

TP113015

The Corporation of the Town of Oakville
1225 Trafalgar Road
Oakville, Ontario
L6H 0H3

Attention: Kirk Biggar, MCIP, RPP, Senior Planner, Long Range Planning,
Planning Services

Dear Sir:

**Re: Peer Review of Preliminary Noise Study (Rev. 4) for the Merton Tertiary
Planning Study Area in Oakville, Ontario**

Amec Foster Wheeler Environment & Infrastructure was retained by the Corporation of the Town of Oakville to conduct a technical peer review of the preliminary noise study completed by SS Wilson Associates Consulting Engineers (SS Wilson) for the proposed Merton Tertiary Planning Study Area in Oakville, Ontario. The site is located north of the Queen Elizabeth Way (QEW) - north of the North Service Road, east of Bronte Road (includes some parcels of land located west of Bronte Road), south of Upper Middle Road West and west of the existing residentially developed lands west of Third Line.

Three rounds of comments were provided for this project to-date. This peer review report updates our fourth round of comments based on the updated documents received December 2014.

The following documents have been reviewed as part of this peer review:

- “Preliminary Noise Study for Merton Tertiary Planning Study Area, Oakville, Ontario,” dated 1 March 2013, prepared by SS Wilson Associates Consulting Engineers (Report No.WA12-032-A REV.1).
- “Preliminary Noise Study for Merton Tertiary Planning Study Area, Oakville, Ontario,” dated 16 December 2013, prepared by SS Wilson Associates Consulting Engineers (Report No.WA12-032-A REV.2).
- “Merton Tertiary Planning Area, Odour and Noise Study Comments” dated February 21, 2014 by the Region of Halton.
- “Preliminary Noise Study for Bronte Green/Merton Tertiary Planning Study Area, Oakville, Ontario,” dated 21 December 2014, prepared by SS Wilson Associates Consulting Engineers (Report No.WA12-032-A REV.4).

In addition, the following regulatory and guideline documents have also been referenced as part of this peer review:

- i. Ministry of Environment and Climate Change (MOECCCC) Environmental Noise Guideline NPC-300, “Noise Assessment Criteria for Stationary Sources and for Land Use Planning”, August 2013;
- ii. MOECC Guideline D-6, ‘Land Use Compatibility’, July 1995;
- iii. Ontario Ministry of Transportation (MTO) Environmental Guideline for Noise;
- iv. Oakville Town Noise By-law (2008-098); and
- v. The Region of Halton Noise Abatement Policy for Regional Roads and New Developments.

Amec Foster Wheeler notes that many of the peer review comments were addressed in the updated report. However, the following items are yet to be addressed in the updated report, and are listed below along with our additional comments:

1. With respect to the ratings and sound level limit for the emergency generators provided in the report, they are the MOECC criteria (e.g., 700 kW with sound level 75 dBA at 7 m) to qualify for registering under the Environmental Activity

- and Sector Registry (EASR). This level will be met only if it is registered under EASR. Notwithstanding the EASR registry, it is still incumbent on the developer to meet the noise criteria outlined in NPC 300. If the generator is assessed under an ECA, the levels maybe different and they might have to be assessed to meet the criteria limits at the existing houses, not for the proposed houses. The generator noise impact should be assessed during the detail design stage to ensure compliance with NPC-300 criteria.
2. The minimum required barrier height for Option B and Option C is clarified in the response matrix. The matrix also states that bungalows can be recommended for low density housing (Option C). However, this is not mentioned anywhere in the report. This should be considered during the detail design stage.
 3. The report indicates that the three overhead doors at the Halton Public Works Yard Facility would likely be opened during the summer and the footnote on page 7 of the report indicates that pneumatic tools and hammering are expected at the facility. The list of typical noise sources and their sound levels provided in the report does not include pneumatic tools and hammers. These sources should be included in the typical noise source list, and assessed during detail design stage.
 4. Sound level criteria provided in Section 6.0 of the report simply mention L_{eq} for both transportation and stationary noise sources. It should be noted that L_{eq} (1hr) is used for stationary sources and L_{eq} (day, night or 24 hr) is used for transportation sources. The report should be revised accordingly for clarity.
 5. One of the key recommendations (i.e. to initiate the process of designating the area within close proximity to Halton Region land as new Class 4 Area as referred in the new NPC-300 guideline) is provided under Section 6.0 “General Notes on the Applicable Sound Level Criteria.” This may get unnoticed, therefore, please put this under the “Recommendation” section.
 6. Under “General Notes Regarding the Three Proposed Option” for Option A (page 13), the requirement of a 5 m noise barrier at the property line to shield any future 2nd storey receptors. It also states that this can be achieved with a 4 m structure or a barrier and berm combination. The barrier and berm combination should have a 5 m height (not 4 m).
 7. With respect to the comment “the current WWTP is about 21% of the design capacity, the WWTP stationary noise assessment should be completed for both the current and future WWTP capacity,” it was mentioned in the response matrix that SS Wilson conducted a detailed noise study for a larger WWTP in Oakville

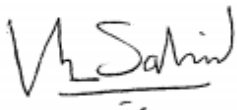
and the sound levels were below the MOECC criteria without any mitigation. It is worthwhile to mention the distance between the plant and receptor for that study, as it is an important detail for consideration of the WWTP impact.

We trust that this review meets with your present requirements. Should you have any questions or if we can be of further assistance please contact the undersigned at your convenience.

Yours truly,

Amec Foster Wheeler Environment & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited

Prepared by:



Mohammed Salim, P. Eng.
Senior Acoustics Engineer

Reviewed by:



Frank Babic, P. Eng., INCE
Acoustics Practice Lead – Eastern
Canada

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9. Odour

January 26, 2015
TP113015



The Corporation of the Town of Oakville
1225 Trafalgar Road
Oakville, Ontario
Canada, L6H 0H3

Attention: Mr. Kirk Biggar MCIP, RPP – Senior Planner
Long Range Planning, Planning Services

Dear Sir:

Re: Peer Review of the Odour Study for the Merton Tertiary Planning Study Area in Oakville, Ontario

Introduction

Amec Foster Wheeler Environment & Infrastructure was retained by the Corporation of the Town of Oakville to conduct a technical peer review of the odour study completed by Pollutech Environmental Limited (PEL) for the proposed Merton Tertiary Planning Study Area in Oakville, Ontario. The PEL report provides an assessment of the potential impacts of the expanded Mid-Halton Wastewater Treatment Plant on the Merton Tertiary Planning Area.

The following additional document provided by the Region has now been reviewed:

- Comments Response Matrix – Merton Tertiary Planning Study Area

Comments

In previous peer reviews of the Merton Tertiary Area Odour Study comments were provided and also response to discussion around these comments.

In a review of the response matrix we note that agreement has been reached on all the comments related to the odour study. These responses have either clarified the position or agreed with the comment and deferred additional analysis to a future work stage if required. Regarding the existing study the following response was made:

- *Comment: The report notes that the MHWWT is approximately 280m from the residential development to the NE of the plant site. This exclusion distance does not appear to include Langtry Park to the NE or the Golf Club to the W and SW as*

Continued...

part of the sensitive areas under the "recreational area" provision of the Halton Region definition, either of which would expect to reduce this value.

- Response: This reference has been removed in the December 12, 2013 Final Report. The reference to "a distance to the nearest residential of 280 m" in the December 12, 2013 Final Report is on Page 5 of Section 4.1. This reference is cited text from the *Mid Halton Wastewater (Sewage) Treatment Plant Phase IV & V Expansion Class Environmental Assessment Environmental Study Report, April 2010, Hatch Mott MacDonald Group*. To address the Peer Review comments we can add a footnote to this text that reads: We note that Figure 10.1 shows Langtry Park that is located closer to the primary clarifiers. If this facility is to be retained then the sensitive areas under the "recreational area" provision of the Halton Region definition would apply and this may create a constraint.
- **Amec Foster Wheeler is in agreement with the response.**
- *Comment: The PEL report concludes by a discussion of the separation distance in the context of the Phase IV & V expansion. It notes that the application of a 1.5 safety factor to the modelling result (160m) would result in a separation distance (presumably at the 5.6 ou level) of 240m to minimize odour impacts. No rationale is given for the use of such a multiplier or for the value used.*
- Response: Reference to 1.5 safety factor has been removed from report
- **Amec Foster Wheeler is in agreement with the response.**

We trust that this review meets with your present requirements. Should you have any questions or if we can be of further assistance please contact the undersigned at your convenience.

Sincerely yours,
AMEC Environment & Infrastructure
a Division of AMEC Americas Limited

Prepared by:



Steve Lamming PhD EP.
Principal, Air Quality

Reviewed by:



Alex Breido PhD P.Eng
Senior Environmental Engineer

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10. Geotechnical

Memo

To: Ron Scheckenberger
From: Michael Patterson
Date: January 23, 2015
File: TP113015
Re: **Merton Tertiary Planning Study – Geotechnical Peer Review**

The following represent Amec Foster Wheeler's comments on the geotechnical aspects of the associated technical reports submitted in support of the Merton Tertiary Planning Study.

General

There is no separate or comprehensive geotechnical report for the study. Discussions on geotechnical aspects of the study are embedded in the following technical reports by the town:

- *Area Servicing Plan for Merton Tertiary Plan Area in the Town of Oakville by David Schaeffer Engineering Limited – October 2014.*
- *Phase 2 Environmental Impact Study – Merton (QEW/Bronte Rd) Tertiary Planning Study – Town of Oakville, Ontario by Beacon Environmental – October 2014.*
- *Hydrogeological Study – Merton Tertiary Planning Area – Town of Oakville, Ontario by R.J. Burnside & Associates Limited – October 2014.*
- *Merton Tertiary Planning Study – Geomorphic Assessment – Fourteen Mile Creek and Associated Tributaries by Parish Geomorphic – October 2014.*

Comments on relevant sections of the abovementioned reports are provided in the following:

Comments on Geotechnical Aspects of the Geomorphic Assessment Report

The calculations of toe erosion allowance, stable slope allowance and erosion access allowance in Section 4.2 of the report conforms with *the Ontario Ministry of Natural*

Resources Technical Guidelines (River and Stream Systems: Erosion Hazard Limit). Consequently, the delineation of the erosion hazard limit as depicted in Figure 4.3 is acceptable.

Comments on Geotechnical Aspects of the Hydrogeological Study Report

The borehole logs in Appendix B generally agree with the soil and bedrock descriptions in Section 5 and the cross sections in Figures 6 to 9.

The title page of "*Binder 1 Compiled*" refers to this report as "Hydrological" instead of "Hydrogeological".

Comments on Geotechnical Aspects of Environmental Impact Study

The numbering sequence of the report sections incorrect. There are two Section 2.1 and 2.2 resulting in Section 2.1 following the second Section 2.2 ...etc.

There are brief discussions on Slope Stability in Sections 3.1.4 and 4.2.10 and reference is made to "*Soil Engineers Limited (2012)*" and "*Conestoga Rovers (2012)*" reports. However the full text of these reports were not appended.

It is noted that there were no Slope Stability Analyses performed to date for the Third Line Lands or Deerfield and Enns properties.

Comments on Geotechnical Aspects of Area Servicing Plan

No comments, as there is no geotechnical content.

Closure

A comprehensive review of the geotechnical component could not be completed as the existing site-specific technical documents were not included or appended to any of the submitted reports.

Closure.



Michael Patterson, M.Sc. P. Eng.
Senior Geotechnical Engineer