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October 28, 2011

**Mr. Steve Stone**
**Senior Planner**
Development Services Division **-** County of Brant
66 Grand River St North
Paris, Ontario
N3L 2M2

Dear Mr. Stone,

**Re. Nith Peninsula Residential Development**
**Public Works Department & Engineering Peer Review Comments (Genivar)**
**Part of Lots 31 and 32, Concession 1 and Part of Gore**
**Town of Paris, County of Brant**

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Thank you for the Public Works Department and engineering peer review (Genivar) comments submitted to this office on August 20, 2010. We have undertaken a review of this correspondence and other comments received and in response, are providing the below comments and enclose the following additional documentation:

1) Updated Functional Servicing Study, J.H. Cohoon Engineering Limited, September 2011;
2) Updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011;
3) Stormwater Management Scheme, J.H. Cohoon Engineering Limited, September 5, 2011;
4) Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, LVM, October 5, 2010;
5) Supplementary Hydrogeological Study, LVM, September 29, 2011;
6) Response to GRCA Comments of March 1, 2011, J.H. Cohoon Engineering Limited, September 5, 2011;
7) Response to GRCA Comments of July 7, 2009 and March 1, 2011, Ecoplans Limited, October 6, 2011;
8) Updated Concept, MHBC Planning, May 31, 2011;
9) Updated Draft Plan of Subdivision, MHBC Planning, signed October 2011;
10) Response to review comments provided by Genivar regarding the "Hydrogeological Review of Sustainability of the Paris Water Supply" report, Azimuth Environmental Consulting Inc. December 22, 2010;
11) Updated Groundwater Contour Map, LVM, Updated October 2011;
12) Traffic Impact Study Addendum, Paradigm Transportation Solutions Limited, September 29, 2010; &

13) Paris Rail Yard Noise Impact Analysis, Nith River Peninsula Subdivision, Valcoustics Canada Ltd., October 20, 2010.

The remainder of this letter and the enclosed technical reports will provide the County of Brant with a comprehensive response to comments received from the Public Works Department and those from the engineering peer review (Genivar). For ease of reference, all comments provided by the Public Works Department and Genivar are stated, followed by our bulleted response. The responses have been prepared in collaboration with:

- J.H. Cohoon Engineering Limited
- LVM
- Paradigm Transportation Solutions Limited
- Ecoplans Limited
- Azimuth Environmental Consulting Inc

We trust the responses, technical reports and addendums submitted thus far and contained herein are satisfactory. It is noted that some of the comments received are detailed technical questions that typically would be addressed as part of final engineering design and addressed through conditions of approval for the Draft Plan of Subdivision. At this point, our project team is of the opinion that sufficient technical information has been provided in support of the proposed Zoning By-law Amendment and Draft Plan of Subdivision application and that remaining issues can be addressed through Draft Plan Conditions.

We would appreciate meeting with the County of Brant and GRCA Staff in approximately 4 – 6 weeks to allow Staff an opportunity to review the enclosed material prior to the meeting. This application has been subject to a great deal of technical study and undergone numerous revisions since its initial submission and we are now looking forward to proceeding to Council for a decision. Please let us know a meeting time that is acceptable to County and GRCA staff.

Thank you in advance for your assistance.

Respectfully submitted,
**MHBC Planning**

Adrian K. Cammaert, HBA, CNU-A
Senior Planner

cc. Holly Illman
Steve Kulmatycky
Domenic Zavarella – Zavarella Construction Ltd.
Jay Hitchon – Waterous, Holden, Amey & Hitchon (cover letter only)
Joe Cohoon – J.H. Cohoon Engineering Ltd.
David Cunningham – GRCA
Brian Zeman – MHBC Planning

**Comments from the County of Brant Public Works Department dated August 4, 2010 on the Area Study, (MHBC Planning, December 2008):**

**Land Use Type And Intensity** (pages 9 -10):

1. Reference to Queen's Ward Public School to be revised as this school has closed and students from same now attend the Cobblestone Elementary School, located within the Grandville Subdivision.

    - Comment noted, the enclosed concept and draft plans have been updated accordingly.

2. Note that the community swimming pool is currently closed with no timeline for it to be re-opened.

    - Comment noted, however, it is understood that efforts are underway to reopen the pool by June, 2012. Regardless, reference to the swimming pool has been removed from the enclosed concept and draft plans.

3. Note proposal is to allow trees to be planted in the boulevard, which has now been approved by Council and is reflected in the County's new Development & Engineering Standards.

    - Comment noted.

**Traffic Impact & Circulation** (page 14):

4. Dundas Street West, Gort Avenue; Barker Street and Laurel Street are designated "Local Roads", as per the County's Official Plan and any reference to a higher road designation is to be revised accordingly.

    - This application does not propose re-designating any roads. The Area Study incorrectly identified Dundas Street West as a Collector Road. Please refer to the previously submitted Addendum Letter to Nith Peninsula Area Study and Planning Analysis, prepared by MHBC Planning, dated May 17, 2010.

5. As noted in the Draft Plan of Proposed Subdivision comments, several proposed intersections are at an acute angle and will require re-design to accommodate 90° intersections.

    - Comment noted, the enclosed concept and draft plans have been updated accordingly.

6. Note that the proposed development does not provide for a vehicular link to Laurel Street from streets internal to the development.

    - Correct, the proposal includes a pedestrian-only access (via a pedestrian path) at this location.

**Pedestrian Movement** (page 15):

7. Note that the sidewalk on King Edward Street is to be extended in 2010 from its current terminus along the frontage of the cemetery lands to Irongate Drive.

- Comment noted.

8. Illustrate the pedestrian connection from Barker Street to Lions Park.

    - The existing trail traversing Lions Park provides a continuous pedestrian connection from Laurel Street (not Barker Street) and the proposed development to downtown Paris. This trail is shown on the enclosed concept and draft plans.

**Municipal Services** (page 16):

9. The 6th Bullet suggests that the entire uncommitted water capacity in Paris is available for this site, which we consider an unreasonable expectation. It is also indicated that a new well source is required and phasing is essential. We did not see any calculations or suggested phasing plan related to this. Calculations of uncommitted water capacity need to be updated before they can be applied to these two developments.

    - Please refer to the previously submitted "Hydrogeological Review of Sustainability of the Paris Water Supply" completed by Azimuth Environmental Consulting Inc. dated March 2010, the enclosed response to Genivar's peer review comments completed by Azimuth Environmental Consulting Inc., dated December 22, 2010 and the updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011. These documents provide a review of the water supply options and clarify the extent of surplus potable water capacity available for future development. It is concluded that within the shorter term, existing infrastructure is capable of production that exceeds the demand created by this proposal, without adversely reducing allocations for other future growth opportunities. It was further concluded that the shallow groundwater regime is a suitable source to meet Paris' long term demand. Phasing of the development will be considered as a part of the Subdivision Agreement.

10. The 7th Bullet suggests additional water supply is available from a new supply at the Bethel Road Water Treatment Plant of 30 to 60 L/sec. Updated information indicates a well capacity of 30 to 35 L/s on an average annual basis with peaking capacity to 50 L/s. The water treatment system, yet to be designed, will use some of this water capacity. Hence, the actual capacity of the potential new supply at the Bethel Road Water Treatment Plant is currently unknown. Also, reference is made to attaining up to 50 L/s from the Airport Well Supply System. We have not confirmed the capacity of this system but we believe it is an unreasonable expectation to think that all excess capacity at the Airport Well Supply System is available for this project.

    - The objective of the report was to indicate that sufficient water is available from the Airport Aquifer. This aquifer has sufficient capacity to support the development. The intention of the analysis is to illustrate that another well could be developed with the Airport Aquifer to supplement the existing system. Also refer to the updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011 regarding the availability of the Bethel Road water supply. In addition, it is understood that a Servicing Agreement will be required as part of the Subdivision Agreement, which will need to be signed prior to the registration of each phase of the proposed development.

**Landscaping** (page 18):

11. With respect to the proposed landscaping improvements at the easterly intersection of King Edward Street & Dundas Street West, consideration must be given to maintaining adequate sight distances, current signage and flower bed plantings.

    - Future Landscaping Plans will consider and address these concerns. Landscaping Plans will be addressed as a part of the Subdivision Agreement.

12. County must consider additional costs that will be required in perpetuity for the maintenance of the proposed entrance features.

    - Comment noted.

**TAB 1 (Zoning By-Law Amendment & Draft Plan of Subdivision):**

13. Section 4.1(b) - This section should be revised to reflect that the Nith Peninsula area is not the last large land holding remaining in the Settlement Area of Paris as there is also the Northwest Paris Area Study or the Southwest Paris Area Study, which are not mentioned.

    - Our comment related specifically to the central Paris area and was not intended to imply that there are no undeveloped parcels in the Town of Paris.

14. Section 4.1(e) - Note that proposed community does not illustrate a secondary vehicular access to the community from Laurel Street (Local Road).

    - Correct, there is no vehicular access proposed from Laurel Street. This area is proposed to be maintained in its natural state for environmental purposes. Only a pedestrian path is proposed in this location. This link will provide pedestrian access to downtown Paris and promotes a healthy community by decreasing reliance on auto-oriented transportation and providing an opportunity for active forms of transportation.

15. Section 4.1(i) - No mention is made that although there is municipal infrastructure adjacent to the development that there is currently not enough capacity in the municipal systems to develop the subject lands.

    - Regarding water servicing, please refer to the previously submitted previously submitted "Hydrogeological Review of Sustainability of the Paris Water Supply" completed by Azimuth Environmental Consulting Inc. dated March 2010, the enclosed response to Genivar's peer review comments completed by Azimuth Environmental Consulting Inc., dated December 22, 2010 and the updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011. These documents provide a review of the water supply options and clarify the extent of surplus potable water capacity available for future development. It is concluded that within the shorter term, existing infrastructure is capable of production that exceeds the demand created by this proposal, without adversely reducing allocations for other future growth opportunities. It was further concluded that the shallow groundwater regime is a suitable source to meet Paris' long term demand.

Regarding sanitary servicing, the Functional Servicing Study prepared by J.H. Cohoon Engineering Limited evaluated two alternative sanitary servicing arrangements for the development. In both cases, the analysis indicates that the site can be serviced through the existing infrastructure. In addition, it is understood that a Servicing Agreement will be required as part of the Subdivision Agreement, which will need to be signed prior to the registration of each phase of the proposed development.

16. Section 5.2, 1st bullet - Revise to reference "Section 8" for additional details on servicing.

- It is noted that Section 8 of the Planning Analysis addressed servicing and stormwater management issues, not Section 7 as indicated.

17. Section 5.2, 4th bullet - Given the completion of the Southwest Paris Area Study and the DPA of the Grandville Subdivision, as well as current plan of subdivision applications for the Edgar and Riverview Highlands (Paris) Subdivision, is the Nith Peninsula Area Study even required in order for the County to have an adequate supply of new plans of subdivision?

- Other studies and applications should not preclude consideration of the Nith Peninsula Area Study. The Nith Peninsula Area Study and applications are consistent with the County of Brant Official Plan, reflect the long term vision for this area as contemplated by the County's Official Plan, is located within a defined Settlement Area, and represent a logical extension of existing infrastructure to a finite terminus. In addition, this development will support downtown Paris by providing a substantial population within close proximity to downtown Paris's many shops and services.

18. Section 5.2, 6th bullet - Similar to the above comment, given the completion of the Southwest Paris Area Study and the DPA of the Grandville Subdivision, as well as current plan of subdivision applications for the Edgar and Riverview Highlands (Paris) Subdivision, is the Nith Peninsula Area Study even required in order for the County to have an adequate supply of new building lots?

- Please see the above response.

19. Section 5.3, 2nd bullet — Costs relative to the Paris Municipal Water Supply, Paris WWCP and sanitary forcemain(s) are not discussed. Reference to Section 8 for additional information on servicing, not Section 7.

- The subject site's central location in the settlement area of Paris, being immediately adjacent to an existing residential area, will result in lower servicing costs as compared to other development locations located further afield. For additional details regarding the development's costs, please refer to the previously submitted Fiscal Impact Analysis completed by Hemson Consulting Ltd, dated September 2009.

20. Section 5.3, 3rd bullet — Has the excess water capacity (7.3 Us) been allocated to other developments (i.e. 80 Willow Street) in Paris? Reference to Section 8 for additional information on servicing, not Section 7.

- For a comprehensive review of the municipal water capacity, please refer to the previously submitted previously submitted "Hydrogeological Review of Sustainability of the Paris

Water Supply" completed by Azimuth Environmental Consulting Inc. dated March 2010, the enclosed response to Genivar's peer review comments completed by Azimuth Environmental Consulting Inc., dated December 22, 2010 and the updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011. In addition, it is understood that a Servicing Agreement will be required as part of the Subdivision Agreement, which will need to be signed prior to the registration of each phase of the proposed development. It is further noted that Section 8 of the Planning Analysis addressed servicing and stormwater management issues, not Section 7 as indicated.

21. Section 8.0, 6[1]" bullet — The capacity of the Bethel Well is unknown at the time of the writing of this memo.

    - The County of Brant commissioned a study on the capacity of the Bethel Road (Aecom, 2009) which found that this well's average daytime capacity is 30 L/s with a maximum day capacity of 50 L/s. It is therefore conservatively estimated that an additional 10-50 L/s of water is available from this well. Additionally, the County is installing a watermain to link the existing water system at Powerline Road to the new well system located at Bethel Road. For a comprehensive review of the municipal water capacity, please refer to the previously submitted previously submitted "Hydrogeological Review of Sustainability of the Paris Water Supply" completed by Azimuth Environmental Consulting Inc. dated March 2010, the enclosed response to Genivar's peer review comments completed by Azimuth Environmental Consulting Inc., dated December 22, 2010 and the updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011.

22. Section 10.0 — Street 'D' is not part of the 'ring road'.

    - Correct and noted.

**Draft Plan of Proposed Subdivision (Dec. 16, 2008), prepared by MHBC:**

Please note that an updated draft plan has been prepared. This updated plan addresses the technical comments provided by both the County and peer reviewers and is enclosed for the County's review.

23. Disposition of the County owned lands to the west of the existing Victoria survey has yet to be determined and will have a crucial role in the ability of the Developers to have access via proposed Street 'C' to Dundas Street West.

    - On June 8, 2010, the Cemetery Advisory Committee denied a request to acquire a portion of lands located to the west of the existing Victoria survey, therefore not making these lands available for the proposed development. Any third access in this area would cross these lands, and because they area not available, Street 'C' has been removed from the development as shown on the enclosed updated concept and draft plans. Currently, two access points are proposed, as supported by the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, September 29, 2010. Should the County wish to revisit their position, a third access as generally shown on the December 2008 Draft Plan could be incorporated into the currently proposed subdivision design.

24. Daylight triangle required at all intersections, to the satisfaction of the County.

- Comment noted, daylight triangles have been incorporated in the updated draft plan.

25. 0.3m reserves to be illustrated as required, to the satisfaction of the County.

- Comment noted, 0.3m reserves have been incorporated where required in the enclosed, updated draft plan.

26. All skewed intersections to be redesigned to 90° intersections. These intersections include; Gort Avenue & Street 'ID', Gort Avenue & Street `E', Gort Avenue & Street 'G'.

- Comment noted, please refer to the enclosed updated concept and draft plans showing the revised street layout.

27. Divided medians, as illustrated on Street `E' north of Gort Avenue, is not an approved design standard in the County's current Development & Engineering Standards.

- This design element was proposed very early in the pre-consultation with the County and was supported from an emergency response standpoint. Nevertheless, this area has been redesigned as shown on the enclosed updated concept and draft plans. The divided median has been replaced with raised planting areas and a pedestrian island / cross-walk, connected by painted lines. This design separates the two lanes of vehicular traffic, offers safe access to the adjacent park and allows vehicles to access the lots along the west side of Gort Street.

28. Ingress/egress to Lots 39, 40, 41 and Lots 115, 116 is to be considered given the location of the proposed divided median.

- This area has been redesigned as shown on the enclosed updated concept and draft plans. The divided median has been replaced with raised planting areas and a pedestrian island / cross-walk, connected by painted lines. This design separates the two lanes of vehicular traffic, offers safe access to the adjacent park and allows vehicles to access the lots along the west side of Gort Street.

29. Dundas Street" is to be revised to read "Dundas Street West".

- Comment noted, this revision has been incorporated on the enclosed concept and draft plans.

30. King Street" is to be revised to read "King Edward Street".

- Comment noted, this revision has been incorporated on the enclosed concept and draft plans.

31. Aggregate Extraction" land designation located west of the Nith River to be revised to a "Heavy Industrial" designation, as per the County's Official Plan.

- This revision has been incorporated on the updated draft plan.

**TAB 3 — Scoped Environmental Impact Study (Ecoplans Limited, December 2008):**

32. Agency comment to be provided by the GRCA.

- Correspondence was received from the GRCA dated July 7, 2009 and March 1, 2011. The project team has completed responses these letters. Please see the enclosed responses prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011 and Ecoplans Limited, dated October 6, 2011.

33. Section 3.2 (Hydrogeology) — The ability to install soakaway pits on each lot has yet to be determined by a Geotechnical Engineer and won't be known until such time as each lot is developed, which is post-design and construction stage of the SWM system.

- Agreed. An assessment of infiltration potential can be generated once grading plans are available. The use of soakaway pits has been evaluated by the LVM reports and has been incorporated in the overall stormwater scheme for this development. Fundamentally, soakaway pits are proposed for the development, although specific analysis on a lot by lot basis during the construction phase of the development will have to be undertaken. Please refer to the enclosed Supplementary Hydrogeological Study, prepared by LVM, dated September 29, 2011 for additional information. The use of soakaway pits can be addressed through a draft plan condition.

34. Table 3. (Proposed Residential Development, Paris — Environmental Management Approach) — The requirement to construct permanent fencing, S/E fencing, signage, biological monitoring must be spoken to in the Subdivision Agreements for these developments. The recommendation of a 10 m setback must be approved by the GRCA.

- Agreed, the method of stipulating these commitments is through the subdivision agreement. Regarding the recommended 10m setback, multiple technical reports have been completed confirming this as an appropriate setback from geotechnical and ecological standpoints. We look forward to discussing this further with the GRCA.

35. Section 5.3 (Proposed Development Fabric) — The park blocks and trails noted in this section may be subject to change through the development of the Area Study plan.

- The enclosed revised concept plan identifies new parkland locations based on County comments. A more centralized park has been added that fronts onto the proposed Gort Street extension. In addition, the access to the park located south of the stormwater management pond has been reconfigured and widened to allow greater accessibility. These parkland locations can be further revised based on additional comments from the County following review of the enclosed draft plan. The proposed trail to Laurel Street will provide a pedestrian connection to downtown Paris and add to the overall walkability of the neighbourhood.

36. Section 5.4 (Stormwater Management) — The Sinkhole SWM Pond will require a legal outlet.

- As per County comments, the area of the sinkhole is not proposed for development. However, in the event that this area is developed in the future, it is agreed that a legal outlet will be required for this sinkhole. The sinkhole has acted as a stormwater

management outlet for this site for an extended period of time. The sinkhole is located on County of Brant lands and has an existing outlet (after ponding) to the river through additional lands owned by the County of Brant and the GRCA. The capacity of the sinkhole was addressed through the previously submitted memorandum to the County of Brant, prepared by J.H. Cohoon Engineering Limited, dated December 16, 2011. However, for additional information please refer to the enclosed response to the March 1 2011 GRCA Comments, prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011.

37. Section 5.5 (Water Balance) — The viability of the installation of soakaway pits on each lot has yet to be confirmed by a Geotechnical Engineer and won't be known until such time as each lot is developed, which is post-design and construction stage of the SWM system.

- Agreed, an assessment of infiltration potential can be generated once grading plans are available. Please see the enclosed Stormwater Management Scheme prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011 for the complete water balance analysis. This can be addressed through a draft plan condition.

38. Section 6.2.1 (Sediment & Erosion Control Plan) — Recommend the use of OPSD 219.130 (Heavy-Duty Silt Fence Barrier) to better mitigate siltation and erosion control. County's experience with the proper installation of the Heavy-Duty Silt Fence Barrier has been very satisfactory (i.e. Royal Highland Estates Subdivision).

- Agreed, this will be included in addition to the other key mitigation and best-management practices noted in Ecoplans' Scoped EIS. This can be addressed through a draft plan condition.

39. Section 6.2.3 (Hydrology / Infiltration) — The viability of the installation of soakaway pits on each lot in order to maintain the existing hydrological regime has yet to be confirmed by a Geotechnical Engineer and won't be known until such time as each lot is developed, which is post-design and construction stage of the SWM system.

- Please refer to the above response to comment 37.

40. Section 6.2.4 (Temporary and Permanent Fencing) — Will the temporary and permanent fencing be located on private or municipal lands? If located on municipal lands the cost to maintain this fencing will need to be considered in the draft plan approvals of these developments.

- The Ecoplans Environmental Impact Study recommends that permanent fencing form the rear lot lines and be located on public property. As there have yet to be commitments made regarding the transfer or conveyance of lands to a public body, it is proposed that the fence be located at the rear of the individual lots and have a requirement to maintain the fencing as part of the subdivision agreement and registered on title of each lot. Having this commitment as part of the subdivision agreement and registering it on title will help to ensure that future landowners will not alter or damage the fence.

41. Section 6.2.6 (Stewardship) — The location of the trails must take into account the recommendations for their location as noted in the Environmental Impact Study.

- This application requests to formalize one existing trail which will act as a pedestrian linkage via Laurel Street to downtown Paris. No works are proposed on the other (informal) trails located throughout the subject site, as per the previously submitted EIS prepared by Ecoplans. Note that the proposed pedestrian trail location is slightly revised from the 2008 Draft Plan, however it is still located entirely outside of the wetland and 15m wetland setback, which is consistent with recommendations of the 2008 Scoped EIS.

42. Section 6.2.7 (Monitoring) — Who will be responsible for the cost to perform the recommended monitoring (i.e. Developer, GRCA, County)?

- It is intended that the developer would be responsible for the costs associated with the recommended monitoring. Most of the recommended monitoring is during the construction period, however there is also an "annual Biological Monitoring" program that is recommended which will occur approximately 2 years post-construction (e.g. 75-90% built and occupied). Final details of this commitment will be discussed with the County and implemented through a draft plan condition.

43. Table 4. (Potential Impacts to Natural Environment and Proposed Mitigations) [Aquatic Resources] — What is the cost in perpetuity to the County to maintain the proposed "snow storage facilities"? The viability of the installation of soakaway pits on each lot in order to maintain the existing hydrological regime has yet to be confirmed by a Geotechnical Engineer and won't be known until such time as each lot is developed, which is post-design and construction stage of the SWM system.

- There are no designated "snow storage facilities" as part of this application. Snow is intended to be cleared in the same manor as other areas of Paris. Therefore, we do not anticipate any significant additional costs to the County as it relates to the snow clearing that would be proposed for this development. We would suggest that some consideration/evaluation of the location of any snow storage within the development so as to minimize the impacts on the environment.

  Regarding soakaway pits, an assessment of infiltration potential can be generated once grading plans are available. This can be addressed through a draft plan condition. An assessment of the viability of the use of soakaway pits has been completed by LVM and has been incorporated into the enclosed Stormwater Management Scheme prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011.

44. Table 4. (Potential Impacts to Natural Environment and Proposed Mitigations) [Wildlife] — It is anticipated that the close proximity of the proposed developments will have a negative affect on the existing deer wintering areas to suggest otherwise would be preposterous. In order to properly monitor the affects that these developments will have on wildlife a very thorough baseline of the existing wildlife, pre-development is required.

- It should be noted that the development site is located in a central area of Paris, within the Settlement Area. In addition, the site is envisioned by the County of Brant Official Plan for residential development.

- From an ecological perspective, it is Ecoplans' opinion that potential impacts to deer wintering areas are minor. This is further detailed in the Scoped EIS, however, additional rationale and discussion is provided below.

  In an email from County staff (Steve Stone, Senior Planner) dated November 2, 2009, Mr. Stone notes the County staff met with MNR and MAH staff to discuss issues of provincial concern. The issue of deer wintering areas and potential impacts from the proposed development was not identified through that correspondence. Moreover, during additional discussions with MNR Guelph District staff, deer wintering was not identified as a concern by MNR.

  When considering potential impacts to wintering deer, it is important to note that White-tailed Deer are tolerant of urban / semi-urban areas and there is little evidence to suggest that development adjacent to deer wintering areas has negative impacts. In fact, deer populations in the agriculture dominant and heavily populated portion of southern Ontario have increased substantially over the past few decades.

  The MNR recently completed a deer survey in southern Ontario, as described in "Ancaster Wintering Deer Survey 2009 – with Management Recommendations (March 2010)". This report provides a good overview of current conditions in southern Ontario. Key points from that report include the following:

  - Deer populations have been increasing since 1985
  - Deer are well adapted to the urban environment
  - Urban areas have few natural predators and no hunting, resulting in more human-deer interactions and impetus for management

  The subject property is within an existing urban area, abutting long-established residential properties to the south, and the natural wooded Nith River Valley to the north, east and west. Given proximity of houses and the urban core, this portion of the valley receives heavy recreational use.

  As input to the Scoped EIS and post-submission, Ecoplans reviewed background information, including MNR data, which identified the deer wintering area along the Nith River floodplain and the Significant Wildlife Habitat Ecoregion Criteria Schedules. Addendum to Significant Wildlife Habitat Technical Guide, DRAFT (OMNR, January 2009). We also completed wildlife inventories, including breeding bird surveys, calling amphibian surveys and supplemental observations. Subsequent to the Scoped EIS submission, and based on discussions with MNR, we undertook an American Badger habitat assessment. In our opinion, this provides a strong baseline inventory for the proposed development.

  All of the above was considered in the impact / mitigation review discussed in the Scoped EIS and current response. With the development proposal, there will be no direct removal, disruption of valley movement opportunities or indirect impact to deer wintering areas in the valley and permanent fencing will restrict uncontrolled pedestrian access. Other mitigation measures were recommended to ensure maintenance and protection of the valley features and functions, including maintaining groundwater inputs to valley slope seepage areas (which may be used by wintering deer).

As a further measure of protection, we anticipate that post-construction biological monitoring will also be undertaken; a preliminary program was discussed in Section 7.4 of the Scoped EIS.

In our opinion, the proposed development, with proper implementation of the recommended protection, mitigation and stewardship measures, will mitigate potential impacts to deer wintering areas along the Nith River floodplain.

45. Section 7.3 (Environmental Stewardship) — The proposed "environmental brochure" will require approval from the County and GRCA prior to submission to the public.

- Agreed. A draft of this document will be prepared and circulated to the County and GRCA for approval prior to public circulation. This can be addressed through a draft plan condition.

46. Section 7.4 (Monitoring) [After Construction — SWM and Landscape Planting Monitoring] — These developments will require a daft plan approval condition that speaks to the Developer being responsible for the County's cost to monitor and maintain the SWM and landscape planting after construction of the developments. Why are the landscape plantings around the SWM pond and in enhancements areas (buffers) only to be monitored and replaced as necessary for a period of 2 years after construction as earlier in this report it was noted that trees surrounding the SWM pond was required in order to control the water temperature in the SWM pond. Given the necessity to control the water temperature in the SWM pond it would be expected that the landscape plantings around the SWM pond should be monitored and replaced as necessary.

- It is agreed that this commitment will be implemented through a draft plan condition. The Scoped EIS recommends a combination of native species plantings and natural succession around the SWM pond. This has a number of objectives, one of which is decreasing pond temperature; others are listed in Section 7.2 of the EIS. Planted trees are not 'required' to control water temperature, but may aid in this regard.

  Two years of post-construction monitoring of planted vegetation is generally considered sufficient to address the most critical period of vegetation establishment. Once established, responsibility for monitoring of vegetation is transferred to the County as part of regular maintenance/monitoring for the SWM.

46. Section 7.4 (Monitoring) [After Construction — Biological Monitoring] — A draft plan approval condition will be required whereby the Developer is responsible for all costs associated with the annual biological monitoring.

- This commitment will be implemented through a draft plan condition.

**Comments from Genivar, dated August 20, 2010 on the Functional Servicing Study (J. H. Cohoon Engineering Ltd., August 2008)**

***General***

1. Section 1.0 (Introduction) — The Study area is located in the Former Township of South Dumfries, not in the Former Township of Brantford.

    - Comment noted.

2. Section 2.0 (Existing Site Topography) — Aerial photos (2002 & 2006) illustrate that post-development of the Highlands on the Nith Subdivision that standing water is visible in the sinkhole whereas an aerial photo (2000) pre-development of the Highlands on the Nith Subdivision illustrates no standing water in the sinkhole area.

    - As per County comments, the area of the sinkhole is not proposed for development. However, in the event that this area is developed in the future, we would anticipate that standing water would only occur within this sinkhole during major storm events and/or frozen ground conditions. The sinkhole has sufficient capacity for the post-development drainage conditions of the development with an overflow to the receiving water course through the County of Brant lands.

    Section 8.2.1 (Land Use and Topography) — As previously noted, the sinkhole has continually had standing water within its limits post-development of the Highlands on the Nith Subdivision, which differs from pre-development of the Highlands on the Nith Subdivision, which did not have standing water within its limits.

    - As previously indicated, the area of the sinkhole is not proposed for development. However, in the event that this area is developed in the future, we anticipate that the change in the drainage patterns will not result in continuous standing water within the sinkhole. In fact, we are of the opinion that standing water within the sinkhole only occurs during major storm events or frozen ground conditions.

***Transportation***

3. Section 3.0 (Road Geometrics) — Minor Collector: minimum horizontal radius is 110m, pavement width is 10m, maximum grade is 6%, intersection angle is 80 — 90 degrees, minimum tangent length between reverse curves is 50m.

    - Comment noted. These standards can be incorporated as a draft plan condition for inclusion into the final survey and engineering documents.

4. Section 4.0 (Pavement) — Pavement design: Local Roads is HL4 = 50mm, HL3 = 40mm; Collector Roads is HL4 = 100mm, HL3 = 45mm. Both Local and Collector Roads to have a minimum Granular 'B' depth of 450mm.

    - Comment noted. These standards can be incorporated as a draft plan condition for inclusion into the final survey and engineering documents.

***Sanitary***

5. Willow Street SPS option: The capacity of the siphon under the Nith River was confirmed as well as the capacity of the Willow Street SPS. The capacities of the Mechanic Street / Willow Street Sewers and the discharge forcemain from the SPS should be confirmed.

   New SPS option: It was stated in the report that once the Mile Hill forcemain is constructed there will be sufficient capacity in the Church Street trunk sewer, however the table in Section 5.2.1 shows that there will still be deficiencies with the 22 L/s redirected. The capacities of the Dundas Street West and Ball Street sewers should be confirmed.

   - Please refer to the revised spreadsheet and text in the enclosed Updated Functional Servicing Study, prepared by J.H. Cohoon Engineering Limited, dated September 2011.

7. Section 5.2.3 (Alternate Sanitary Servicing of Zavarella Lands) — The County has yet to decide on the sanitary servicing scenario they want to have constructed in regards to the servicing of the Zavarella lands (i.e. gravity sewer to the existing Nith Siphons or new SPS).

   A comparison of the two options identified and a suggested preferred alternative would be beneficial.

   - The purpose of the Functional Servicing Report is to illustrate that the site can be serviced. Final details will be determined during final design.

8. A sanitary design flow of 29 L/s (Section 5.1) was calculated based on a rate of 450 L/person/day which is consistent with County's old Design Standards. However, the average day flow of 8.5 L/s presented in Section 5.3.2 is lower than County Design Standards.

   - The 29.0 L/s is a peak flow on the basis of 450 litres per second and a peaking factor of 3.6. The average day flow is as follows: Average Flow based upon 400 litres per person per day is 10.82 litres per second including infiltration (5.9 litres per second). The average flow based upon 450 litres per person per day is 6.67 litres per second not including infiltration.

9. Section 5.3.1 (Wastewater Design Criteria) — Council recently approved an average daily per capita flow rate of 400 L/per/day. Revise the calculations utilizing the new per capita flow rate.

   - Please see the answer to the above comment, the sanitary design flow relating to this development is 26.2 l/s (peak). The average including infiltration is 10.82 litres per second. The revised calculations included with the enclosed Functional Servicing Report are based on 400 litres per person per day. This is consistent with the County of Brant's recently approved average daily per capita flow rate.

10. Section 5.3.2 (Paris Wastewater Pollution Control Plant Capacity) — The values used in this section is to be revised utilizing the County's new design criteria, no mention is made relative to the assimilative capacity of the Grand River, which will need to be addressed prior to any further upgrades to the Paris WWCP.

    Current available plant reserve should be updated to reflect current conditions. Provision of area plans depicting plant service areas, populations, etc. would be useful.

- The enclosed Functional Servicing Report, prepared by J.H. Cohoon Engineering Limited, dated September 2011 has been updated to reflect the revised design criteria.

11. There was no sanitary layout or sewer design sheet available on the northern areas of the Kulmatycky / Zavarella lands (Appendices C and E). Sewer / forcemain design for the two discharge options should be provided.

    - This will be provided during the final design stage of the development and could be included as a draft plan condition.

12. A key plan showing location of the numerous plan / profile drawings would be useful.

    - This will be provided during the final design stage of the development and could be included as a draft plan condition.

13. Appendix 'C' (Sanitary Sewer Design Sheet) — What was the design criteria used to generate the sanitary sewer design sheets?

    - The revised figures included with the enclosed Functional Servicing Report are based on 400 litres per person per day. This is consistent with the County of Brant's recently approved average daily per capita flow rate.

***Water***

1. Section 7.1 (Water Supply Capacity) — Reference to CDC Report (April 2, 2008) is now outdated and should not be referenced in this document. Reference to County Policy PWE-2003-05 is outdated as this Policy was rescinded by Council on July 21, 2009. Reference to an elevated tank in Zone 1 being completed in 2010 is outdated as this infrastructure is not scheduled for 'construction in 2010. The KMK report (September 10, 2007) is outdated and should not be referenced in this document. The proposed elevated tank in north Paris and the M. Sharpe Reservoir are both storage facilities and as such they create no new water supply in Paris. They only allow for the Paris water supply to be better managed. Reference is made to two (2) different per capita design water consumptions; reference is only to be made to the County's current design standard. Updated information should be considered at this time.

    - The functional servicing report has been updated with reference to the new policy of the County of Brant (Being CD-11-19) which allocates 11.9 l/s which is distributed by the County to developers in accordance with County of Brant Council Policy CDC-2009-05. Additional water supply is anticipated to be available in 2012. The current County of Brant policy of utilizing 400 liters per person per day has been utilized within the functional servicing report update (attached).The references to the improvements to the elevated tank in north Paris and the M. Sharpe Reservoir has been updated in the functional servicing report as well. For updated water supply information, please refer to the enclosed response to Genivar's peer review comments completed by Azimuth Environmental Consulting Inc., dated December 22, 2010 and the updated Functional Servicing Study Addendum, J.H. Cohoon Engineering Limited, October 25, 2011.

2. Section 7.2 (Distribution System) — A Water Distribution System Analysis will be required to be completed to the satisfaction of the County, for these two (2) developments. If constructed, these two developments will add a significant number of consumers to Pressure Zone 3. The feed to Pressure Zone 3 from Pressure Zone 2 is currently from a single pipe installed in a less than ideal manner. Considering a definition of risk being a combination of the probability of something happening and the consequence of that action, the development of this subdivision increases the consequence of the single supply to Pressure Zone 3 failing thus increasing the risk. The risk is currently at an acceptable level. Development of these subdivisions may put the risk of having one feed from Pressure Zone 2 to Pressure Zone 3 to an unsatisfactory level and make the requirement for a second connection between the two zones or some other mitigating measure.

    - Through the final design of these subdivisions, the appropriate modeling and operational issues relating to the development will be assessed to the satisfaction of the County of Brant and could be included as a draft plan condition.

3. The site is located in both pressure Zones 2 and 3, with the proposed servicing coming from Zone 3 watermains. This would lead to excessive pressures at lower elevations in the north end of the development. Details of the system layout and hydraulics are required.

    - Exact details of the system layout and hydraulics will be provided during the final design stage of the development.

4. There was no mention of available fire flow in the development, or if the proposed upgrades along Gort Avenue and Barker Street are sufficient for meeting fire flow requirements.

    - This can be addressed through the final design of the development and flow testing of the system at the supply points. It is likely that a pressure reducing valve may be required due to the existence of two pressure zones.

5. No mention was made of the total water requirements for the development area (average day / maximum day demands).

    - Similar to the sanitary sewers, the average day would be as follows: 1280 persons x 400 litres/person/day / 86400 = 5.9 l/s. The estimated peak flow would be 16.3 l/s.

6. Due to the recent upgrades to the Gilbert wells, the available water capacity should be updated to reflect current conditions.

    - Comment noted, the available capacity of the Paris Water system for new development has been increased by 11.9 l/s.

***Stormwater***

Since no sub-watershed plans were available, it was stated that City of Cambridge IDF parameters were used to design the SWM facility in accordance with County of Brant Development Engineering Standards.

7. Section 6.0 (Storm Sewers & Appurtenances) — Minor Systems to be designed for a 5-year

storm event. Major Systems to be designed for a 100-year storm event. SWM Report to analyse 5 — 100 year storm events. Legal outlets are required for all SWM outlets, especially the proposed "sinkhole" SWM Pond and the proposed storm sewer outlet on northeast side of Street 'A' to Block 128 (Open Space).

- It is our opinion, that all required legal outlets are in place. In the case of the stormwater management pond, the outlet is through lands presently owned by the developer. In the case of the sinkhole, these lands are owned by the County of Brant. In the event that the area of the sinkhole is developed, our analysis indicates that the sinkhole has sufficient capacity for all storm events up to and including the 100 year event without overtopping.

8. There was no detailed storm sewer layout available on the northern areas of the Kulmatycky / Zavarella lands and the actual connection layout was not known; the review was only based on the storm sewer design sheets.

- The enclosed Updated Functional Servicing Study, prepared by J.H. Cohoon Engineering Limited, dated September 2011, contains the updated design sheets for the development.

9. There were no pipe labels on the design sheets and on the drawings; it made it difficult to verify the design pipe capacity; the pipe data in the design sheets do not match the drawings.

- The enclosed Updated Functional Servicing Study, prepared by J.H. Cohoon Engineering Limited, dated September 2011, contains updated drawings that include the pipe layouts and design sheets.

10. The design standard includes: minimum 2.4 metres of cover over the proposed storm sewer under the preliminary road profiles, design concept of major./ minor dual drainage system, 5-year storm event for design of minor system, and foundation drains to be connected to sump pumps / discharged to grade. There were two sets of IDF curves mentioned in the report as follows:

<u>J.H. Cohoon Engineering Limited in Functional Servicing Study</u>
A = 28.6
B = 0
C = 0.707 (City of Cambridge — in the Report)
A = 1593
B = 11
C = 0.879 (Nith Peninsula Study — in the Appendix Design Sheet)

If Tc is less than 10 minutes, IDF curves from the City of Cambridge produces higher rainfall intensity; otherwise, IDF curves of the Nith Peninsula Study generates more rainfall intensities up to 400 minutes in time of concentration; thus, in the storm sewer design sheet, it was using a more intensified rain storm data.

Based on the design sheets and the available storm sewer drawings, there were sections of drainage pipe that needed to be re-assessed and upgraded.

- The current design is based upon the current County of Brant criteria.

11. The first pipe on Gort Avenue (north of Street "A" at the southern end) should have a slope of 0.99% and design capacity of 0.284 $m^3/s$ according to the design drawing; thus it might not have enough capacity to convey the sub-catchment flow. The 450 mm diameter pipe should be upgraded to 525 mm.

    - See the revised calculations and pipe sizing in the enclosed Updated Functional Servicing Study, prepared by J.H. Cohoon Engineering Limited, dated September 2011.

12. Design gradient of the $6^{th}$ pipe along Gort Avenue, north of Street "F", should be changed from 262.20 m (D/S IL) to 262.16 m (new D/S IL); thus, the design capacity will be increased to 0.654 $m^3/s$ with 98% of full flow capacity.

    - See the revised calculations in the enclosed Updated Functional Servicing Study, prepared by J.H. Cohoon Engineering Limited, dated September 2011. Any additional revisions can be addressed during the final design stage of the development.

13. The second pipe (375 mm) on the Street "H" does not have enough cover on the downstream end (i.e. 2.185 m less than the minimum required of 2.4 m); lower the downstream invert level from 251.13 m to 250.915 m.

    - Although the target is 2.4m of cover, the current criteria for storm sewers are that individual storm services are not required and therefore, the need for 2.4m depth is not required. This can be addressed through the final design.

14. Appendix 'B' (Storm Sewer Design Sheet) — Several pipe sections are noted as being designed to flow at 90% full or greater during a 5-year storm event. These pipe sections are not acceptable and will require redesign to flow less than 90% full during a 5-year storm event.

    - The sizing of the pipes is consistent with good engineering practices. The final design considerations can occur at the final design stage of the development

15. The control of stormwater quantity was not fully reviewed without the application of a hydrologic / hydraulic model to evaluate the hydraulic performance and the backwater effect due to the water level of Nith River.

    - The control of stormwater quality was stated according to the MOE's Design Guidelines; there were two wet pond / wetland type stormwater management facilities proposed to remove sediment. The proposed Stormwater Management Scheme prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011 (enclosed) does not address quantity controls due to the proximately of the site to the outletting/receiving river (Nith River). The intention of the stormwater management scheme is to provide quality controls only and any quantity control that occurs within the pond is a result of the quality control aspects. The location of outlet from the stormwater management facility is above the high water level of the Nith River and will not be impacted by the high water level.

16. Insufficient data to determine the adequacy of stormwater quality and quantity control at outlets was mentioned.

- The enclosed Updated Functional Servicing Study, prepared by J.H. Cohoon Engineering Limited, dated September 2011 has been updated to address the quality control aspects of the stormwater management scheme. As previously indicated, no quantity controls are being proposed.

17. Section 8.4 (Stormwater Management Design) — The use of the municipal road allowance as a control storage area is not permitted. The use of oil/grit separators as a stormwater quality control measure is to be deterred due to the costs the County will incur in perpetuity to maintain such infrastructure.

- The County of Brant Development Standards allow some ponding within the Municipal right-of-way. The final design will likely have some sags within the road profiles and therefore, ponding during major storm events is unavoidable. This will be addressed through the final design. The use of oil/grit separators is an acceptable method of quality control under the provisions of MOE guidelines (2003).

18. From the County of Brant Infrastructure Study Report (TSH 2001), routine CCTV inspections were recommended to be conducted on a 5 year rotational basis for all main storm sewers in order to evaluate sewer deficiencies based on theoretical hydraulic performance.

- Comment noted.

19. Section 9.0 (Water Balance Analysis) — The post development infiltration for Soakaway Pits is calculated at 24,500 $m^3$/yr and represents approximately 45% of the total post development infiltration (54,170 $m^3$/yr). This amount of infiltration cannot be guaranteed as the number of units that will be viable for the use of soakaway pits is not determined, until Building Permit stage. By that time the SWM system for the entire development will have been designed and constructed. By assuming that all units will be viable for the use of soakaway pits is unrealistic and should be accounted for the in the design of the SWM system.

- The stormwater management systems are not intended to provide quantity controls (in fact, they are in addition to any stormwater management controls that are placed on the site). The overall stormwater management scheme (pond design) does not take into account the use of soakaway pits on those lots that have soils that are suitable to the infiltration of the roof water.

20. Appendix 'E' (Drawings):

37.1 Dwg. 7230 — Preliminary Proposed Road Grades: Legal outlet for Sink Hole SWM Outlet is required and is to be illustrated on the drawing.

- Please refer to the enclosed Stormwater Management Scheme prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011.

37.2 Dwg. 7230-S2 — Sanitary Sewer Layout Zavarella Lands: Illustrate how sanitary drainage area "EX1" is to be serviced.

- These lands are not included in the proposed draft plan of subdivision.

37.3 Dwg. 7365-SWM1 — Does the County want to maintain +/- 200m of retaining wall plus +/-170m of SBGR and fencing? How will this proposed design look aesthetically?

- This is a temporary feature and the location of the stormwater management pond could be adjusted slightly in order to eliminate the need for the retaining wall and guardrail.

**Comments from Genivar, dated August 20, 2010 on the Geotechnical Investigation (Naylor Engineering Associates Ltd., October 2008)**

Please note that a supplemental report entitled "Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report" has been prepared by LVM, dated October 5, 2010. As a result of this additional analysis, the required setbacks and development limits have been adjusted on the draft plan.

In general the report is well done, and addresses essential geotechnical aspects for this residential development. The slope stability assessment is a separate report with comments below. The following are some general comments from the current review.

21. It appears the proper, standardized investigation procedures have been used for test pits and boreholes, including use of hollow stem and SPT drilling techniques. The logs are generally well done and contain sufficient information. Groundwater levels are determined from a series of single and multi-level standpipe piezometers; this is good practice. The piezometers must be decommissioned prior to construction, by a licensed well technician.

- Comment noted, no response required.

22. The number of laboratory soil tests is minimal, but provide a reasonable representation of the primary materials on site. No environmental concerns were identified and no chemical tests for soil or groundwater samples were done. Off site soil disposal, if any, requires specific chemical quality testing under current regulations.

- Comment noted, no response required.

23. The report confirms that Nith River has a wide floodplain. The floodplain is subject to flood and various erosion hazards which have regulated setbacks for development. The required setbacks should be addressed in the slope stability report, as we have indicated previously.

- Please refer to the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for details regarding the required setbacks.

24. The report confirms our understanding that groundwater seepage zones exist within the slope and that the Nith River is based on the bedrock. These geological conditions should be addressed in the slope stability assessment.

- Please refer to the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for additional details regarding geological conditions.

25. It is stated that extensive grading operations are required for the development, and

these activities should be approved by the municipality and regulatory agencies, and monitored by geotechnical engineering personnel. Recommendations for type of material, lift thickness and compaction appear to be satisfactory. Topsoil is to be stripped from the site prior to fill activities. It is not stated if imported fill materials will be used, or if excess material will be disposed of off site. The quality of all fill materials must be approved by the Engineer prior to use.

- The intent is not to have a surplus or deficit of fill on site. This will be addressed through the final design of the subdivision.

26. Geotechnical recommendations for foundations and services construction are reasonable. Geotechnical inspections are required during construction, to confirm site conditions and perform necessary monitoring and QA/QC testing.

- Details regarding geotechnical inspections and testing can be dealt with through a draft plan condition.

27. Section 4.4 (Pavement Design), 1st paragraph — Due to changes in the soil composition being a quantifiable variable the County will require that the Granular 'B' Subbase depth to be 450 mm throughout the entire development area.

- Noted, however, Grandular 'B' subbase depth should be reduced if the sub-grade is sand and gravel to lessen truck miles and aggregate costs.

28. Section 4.4 (Pavement Design), 5th paragraph — The binder layer of asphaltic concrete is to be HL8 (PGAC = 58-28) and not HL4.

- HL4 and HL8 are roughly equivalent, however, there is potential for aggregate segregation with HL4.

29. Section 4.4 (Pavement Design), 7th paragraph — It is to be noted on the subdivision construction drawings that subdrains will be required as recommended by the geotechnical engineer.

- Subdrains and other construction details will be addressed through draft plan conditions.

30. Section 4.6 (At-Source Stormwater Infiltration) — The determination of which lots will be suitable for infiltration to be determined by a geotechnical engineer after reviewing the Site Grading Plans. This statement is significant as the SWM Plan for the development of these lands indicates that ALL lots will have infiltration galleries. If a significant number of lots are not suitable for infiltration galleries then additional stormwater will be directed to the municipal storm sewer system; therefore the design of the SWM system (i.e. storm sewers, SWM Facilities) need to take this extra storm water into account in its design.

Stormwater management and water balance designs for the site should be approved prior to construction.

- The stormwater management facility and the flows into the pond do not reflect the fact that infiltration is occurring through the proposed drywells. The design of the pond

assumes that all runoff for all storm events is directed into the facility. In this application, the stormwater management pond is primarily a quality control pond as quantity controls are not required due to the proximity to the Nith River.

31. Some of the onsite material appears to be acceptable for reuse as granular material and structural fill.

- Agreed, the reuse of on-site material for pavement sub-base and structural fill is recommended.

**Comments from Genivar, dated August 20, 2010 on the Slope Stability Setback (Naylor Engineering Associates Ltd., February 2007)**

The following review references GRCA *Policies for the Administration of the Development, Interference with Wetlands and Alterations to Watercourses Regulation,* under 0, Reg 150/06.

32. It is understood that eleven (11) boreholes were drilled in April 2006 to investigate soil and groundwater conditions in the various slope areas on site. Most of the boreholes were drilled near the crest of slope. The borehole logs indicate that reasonably competent inorganic sand, gravelly sand, silt and silt till soils are present, overlain by a thin layer of topsoil. Penetration resistance N values indicate that the soils are relatively dense, so they should possess a reasonably high degree of internal strength. As such, no significant global stability concerns are expected for the moderate slopes. Significant slope overgrowth appears to be present to stabilize the shallow soils, but unprotected cohesionless soils may be susceptible to localized erosion. It should be confirmed if these zones exist in the slope. The borehole logs indicate the presence of perched groundwater within granular layers and at the interface of the relatively dense till units. Groundwater table and related seepage potential are not specifically defined or discussed, and the engineer should comment on the development effects on surface drainage, groundwater and slope stability. Also, confirm that this.

- Regarding the potential for erosion of cohesionless soils, non-cohesive soils do exist on the slopes and would be susceptible to erosion but site grading and development will reduce uncontrolled runoff over the valley slopes and the slopes are covered with vegetation with a root mat that provides resistance to surface erosion. Also the native non-cohesive soils generally have a high angle of internal friction and compact to dense relative density which increases resistance to erosion. Erosion caused by seepage has been considered in the slope stability analysis and appropriate setbacks are provided.

- Regarding groundwater, the developer intends to match the pre-development infiltration rate through spatially distributed infiltration facilities throughout the property. By matching pre-development rates and the distribution of infiltration, recharge of perched aquifers and the shallow groundwater table will continue, thereby sustaining processes such as groundwater seepage that are dependent on groundwater resources.

33. The slope profiles have been surveyed for elevation, and the elevation of the adjacent Nith River is provided on the cross sections. The cross sections indicate that slopes of about 2.8:1 to flatter than 4:1 are present.

- Comment noted, no response required.

34. Preliminary setbacks are presented with reference to GRCA and MNR policies, and apparently include a stable slope component (FoS=1.75), a 6 m access allowance, and an erosion of allowance of 2 m (except for Section F-F which has a 10 m erosion allowance). Deducting the access and erosion allowances, the stable slope setback component in Table A would appear to range from 0 to 18 m. The larger stable slope setbacks are on the west side of the site (sections A-A and C-C). The engineer should describe how these values were determined, and state if they satisfy current policy criteria.

    - Please refer to the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for detailed setback information and criteria. This criteria is in accordance with MNR and GRCA Policies and Guidelines.

35. We also recommend that the following items be addressed:

    a. Provide supportive data and calculations for the slope stability assessment (i.e. stability analysis plots and FoS's). The worst case scenario should be provided at a minimum.

        - Please refer to the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for slope stability assessment data and calculations.

    b. Indicate if a flood hazard allowance is required on site.

        - Please refer to the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for information regarding flood hazard allowance.

    c. Indicate if the Nith River channel is confined or unconfined, in accordance with the GRCA criteria. It appears there are some broad, flat valley lands adjacent to the channel that are only about 2 m above the river water level. Could these areas be impacted by flooding or be situated in a meander belt? Is a meander belt allowance required for these areas? The 15 % slope inclination criterion in paragraph 3 of the letter-report suggests that a confined channel scenario may have been considered, in which case flood hazard, toe erosion, stable slope and general setback components may apply. Please confirm.

        - The Nith River channel is a terrain-dependant, confined river system. The meander is discussed in detail in Section 6.2 of the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010. Please refer to Table 3 "Summary of Erosion Hazard Limit Allowances" in the same report for information regarding erosion access allowance, stable slope allowance and toe erosion.

    d. Clarify how the erosion allowances were determined; does section F-F with slope toe in the river experience active erosion? Has active erosion in other meander areas been considered? The 2 m to 10 m erosion allowance may not meet current policy requirements, and a 15 m general setback may be required as well. Please comment.

- Please refer to Section 6.2 of the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for information regarding Toe erosion allowances. Toe erosion allowances vary from 0m to 15m. Active erosion has been considered.

e. Portions of the Nith River channel in Paris are founded on bedrock, so channel incising and erosion might not be a significant concern. Please comment on bedrock conditions and effects on the setback allowances, if any.

- Please refer to Section 5.6 of the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, for information regarding bedrock conditions. The underlying bedrock conditions of the Nith Peninsula improve global stability.

f. Development within erosion hazard areas may be permitted where specific policy criteria are met. This should be discussed in the context of current site layout and design, and the final setback allowances.

- The hazard areas on the site have been identified through detailed geotechnical analysis. Appropriate development limits and setbacks have been established and incorporated into the design.

36. The Slope Stability Analyses was not provided in the PWD copy of the Nith Peninsula Area Study & Supporting Technical Reports binder (December 2008) but is located in Binder 1 (Tab 6) of the Technical Report Binder - Draft Plan of Subdivision Nith Peninsula (November 2009).

- Comment noted. For the most recent slope stability information, please refer to the enclosed Slope Stability Study, Kulmatycky Property Geotechnical Engineering Report, prepared by LVM, dated October 5, 2010, in addition to the previously submitted technical reports.

**Comments from Genivar, dated August 20, 2010 on the Hydrogeological Investigation (Naylor Engineering Associates Ltd., June 2008)**

***Section 3.3, page 4***

37. The report should include a "big picture" description of the hydrogeology to address a description of aquifers / aquitards, the relationships between them, whether or not they are supporting the Nith River (or vice versa) and possibly whether or not they are currently being used.

- Section 3.6 of the Hydrogeological Investigation discusses a general overview of the elevation of the groundwater table vs. that of the Nith River, however, the scope of the study pertains to the site itself. Without having boreholes beyond the site boundary, comments pertaining to relationships between aquifers/aquitards and support of the Nith River cannot be made. Regarding use, again without knowing the stratigraphy beyond the site, looking at private wells and trying to ascertain whether they are connected to on-site deposits would be an inference at best.

***Section 3.4***

38. More hydrogeological information should be included in this section for each of the units described, including extent of each unit, whether it functions as a local / regional aquifer / aquitard, whether or not there are water well users taking from this aquifer, groundwater levels in each aquifer, etc.

    - The cross sections included in the drawing illustrate the extents of various soil deposits. Groundwater is described in Section 3.6. Regarding the extent of each unit – a prohibitive number of boreholes would be required to further delineate (beyond the appended cross sections) the extent of each unit. For the purposes of the study, the information presented should be sufficient. Information about neighbouring wells would require a well survey and a search of the MOE WWR database – this was not part of the scope of the study (which was to investigate the hydrogeology of the property itself).

39. Drawings 4 and 5 are listed in the text before Drawing 3, consider reordering.

    - Comment noted.

***Section 3.6***

40. The groundwater elevation ranges in the north / south do not correspond to the groundwater ranges provided in Table 1. BH 7 in particular is in the middle of the site rather than the north or south.

    - The statements in Section 3.6 are prefaced with "general" and "typical", and are not meant to address every individual measured groundwater elevation. The emphasis is on trends and patterns of the groundwater table characteristics on a site scale.

41. It is suspected that there would be a westerly component to groundwater flows as well, but there are no wells in the low lying areas to confirm, as there are on the eastern side.

    - There are four boreholes along the western edge of the field. Boreholes could not be installed in the wooded area. Groundwater on the site is influenced primarily by the seeps on the eastern portion of the property.

42. Is there any other suspected discharge to the Nith River based on the groundwater flow patterns other than the seeps? It seems that due to site topography and the steep valley walls, the groundwater on the site will either discharge to the Nith River, or recharge underlying (bedrock) aquifers that are near the base of the Nith River.

    - The study examined on-site conditions, no investigation beyond the site boundaries was undertaken. However, based on the elevation of groundwater at the northern edge of the property, and the elevation of the Nith River, a portion of groundwater likely discharges to the River beyond the northern property boundary.

***Section 4***

43. Section 4.1.1 (Precipitation and Evaporation) — The Investigation used the City of Brantford's average annual precipitation value (892 mm/yr). As Paris has historically received a larger volume of precipitation per year than the City of Brantford a larger average annual precipitation value should be utilized.

    - There are no meteorological stations in the Canadian Climate Centre database for "Paris". If suitable precipitation data is available, please provide a reference and the water balance calculations will be updated accordingly.

44. The distribution of surface soil types should be briefly discussed in more detail (i.e. more sand in the north, more silt / clay in the south), as this will affect decisions to be made on where infiltration will be suitable.

    - Section 5, paragraph 3 of the report notes that optimization of soakaway pits and SWM features should be based on post-grading subsoil characteristics.

45. Will there be a post development water budget scenario provided to take into account how the impervious surfaces will impact groundwater recharge / flow and how these issues will be best mitigated?

    - A post development water balance has been completed; please refer to the enclosed Stormwater Management Scheme prepared by J.H. Cohoon Engineering Limited, dated September 5, 2011 for the complete water balance analysis.

46. Given the limited runoff locations found on site, where would the runoff volumes be leaving the site and how will this impact the development?

    - With the development of the lands, the runoff volumes from the site will increase due to the increase in the amount of impervious surfaces. However, the peak discharge rates from pre to post development will remain unchanged. This is a typical stormwater management requirement.

***Section 5***

47. Section 5 (Summary), 3rd paragraph — The seepage points on the west valley slope and on the eastern property slope are to be protected in order to support the wet areas on the eastern slope.

    - Agreed, seepage points on the eastern and western slopes are to be protected. Please refer to the enclosed Supplementary Hydrogeological Study, prepared by LVM, dated September 29, 2011 for information regarding the eastern seepage points.

48. Section 5 (Summary), 3rd paragraph — Consistent with the Geotechnical Investigation, the acceptability of the soils to support an at-source infiltration gallery will be determined after post-grading activities are complete, which is too late as the SWM system will have already been designed and installed. This design flaw could negatively affect the operation of the SWM system and have dire consequences to the Developer, Municipality and property owners (both

internal and abutting to the development).

- Agreed. An assessment of infiltration potential can be generated once grading plans are available. This could be incorporated as a draft plan condition.

49. Section 5 (Summary), 5th paragraph — The County will require that future groundwater monitoring will be required to obtain the high water levels during spring thaw conditions.

- Future groundwater monitoring requirements can be dealt with through a draft plan condition.

50. Summary items should not include new information, but should summarize items from the rest of the report (i.e. pre and post development recharge considerations). A discussion section would be more appropriate for some of these items.

- Comment noted.

***Drawing 3***

51. Groundwater elevations at each piezometer location should be included on the map.

- Groundwater elevations at each piezometer location are shown on the enclosed updated Groundwater Contour Map, prepared by LVM, October 2011.

52. It was noted that the contours on the map did not exactly match up with the levels provided in the appendices.

- Groundwater contours have been updated on the enclosed updated Groundwater Contour Map, prepared by LVM, October 2011.

53. BH7 is the only well on the eastern side of the study area next to the river, whereas the remainder are at a higher elevation. Contours on the map are stretched in the vicinity of this borehole.

- Based on the significant elevation change on the eastern side, plus the known seepage points, groundwater is expected to be significantly lower in this area

***Drawings 4 and 5***

54. Cross section A seems to suggest that there may be local groundwater flow towards the low lying area next to the hill, which possibly suggests it is a discharge area at certain times of the year. The scoped EIS suggested that there was a poorly defined channel draining this wetland. This feature and its hydrogeological implications should be discussed in the text, particularly as it applies to nearby structures and stormwater management facilities.

- The enclosed Supplementary Hydrogeological Study, prepared by LVM, dated September 29, 2011 contains a focused investigation of the groundwater seepage zone.

***Miscellaneous***

55. Borehole Number 8 - Groundwater observations are required at this borehole due to its close proximity to the proposed SWM Facility, which is proposed to be designed with infiltration galleries.

    - There is no monitoring well at BH 8. BH 107 and 108 are in proximity.

56. A section discussing the results of the hydrogeology and water balance and how these results relate to the development should be included.

    - If further discussion is required, please provide a detailed description of what type of information should be included.

**Comments from Genivar, dated August 20, 2010 on the Traffic Impact Study (Paradigm Transportation Solutions Ltd., October 2008)**

In preparing the Peer Review, the following documents were reviewed:

- Trip Generation, 7th Edition, Institute of Transportation Engineers
- Ministry of Transportation, Book 12, Ontario Traffic Manual (OTM)
- The County of Brant Transportation Master Plan, Final Report, December 2008

***Site Trip Rates***

The trip rates were not provided in the traffic report but, based on GENIVAR's review of the rates from the ITE manual, the estimated site traffic to be generated by the proposed development is appropriate.

***Site Trip Distribution and Assignment***

The total site traffic assigned to the road network as presented in the traffic study is inconsistent with the number of estimated site traffic. There are significant over estimations of the site traffic on the road network, especially the easterly intersection of King Edward Street and Dundas Street West.

The site traffic provided in Figures 6A and 6B do not match the site traffic provided in Table 3 nor the trip distribution provided in the report. The differences in site traffic volumes are summarized in Table 1:

Table 1 — Site Traffic Summary

| | | AM Peak Hour | | | PM Peak Hour | |
|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total |
| Table 3 | 70 | 233 | 303 | 249 | 141 | 390 |
| Figure 6A/6B | 230 | 138 | 368 | 263 | 149 | 412 |
| Difference (Quantity) | 160 | 95 | 255 | 14 | 8 | 22 |
| Difference (Percentage) | 228% | 41% | 84% | 6% | 6% | 6% |

The AM site traffic illustrated in Figure 6A is significantly higher than the estimated site traffic in Table 3. The use of the increased site traffic could result in an over estimation of the roadway impacts and necessary road improvements.

- The Site Traffic Summary has changed as a result of the removal of the proposed Street C connection to Dundas Street. As a result, the AM and PM Peak Hour traffic data has also changed. Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010 for the updated AM and PM Peak Hour traffic summary.

***Existing and Background Conditions***

No information was provided on the time period or duration of the traffic counts and the details of the actual turning movement counts were not provided. Therefore, the peak hour of the intersection turning movements and volumes cannot be confirmed.

- Count data was collected in February 2008 as noted in Section 2.2.

A background traffic growth rate of 2 percent per year for 10 years was applied to the existing traffic volumes to obtain the future background traffic. County records indicate at 1.1% Annual Growth Rate for Rest Acres Road and King Edward Street; therefore 2% is acceptable.
Based on the output sheets provided, results of the intersection analysis provided for the existing and background conditions are acceptable.

- Comment noted.

***Future Conditions***

The traffic study indicated that the easterly intersection of King Edward Street and Dundas Street West would experience long delays on the eastbound left-turn movement during the AM and PM peak hours, once the site traffic was added to the intersection volumes. The delays are reported to be 64 seconds in the AM peak hour and 94 seconds in the PM peak hour. However, the volume-to-capacity ratio on the eastbound left-turn movement 'is below 1.0 during both peaks hours.

- Comment noted.

The traffic study recommended the easterly intersection of King Edward Street and Dundas Street West be signalized and that a northbound left-turn lane be provided. The traffic study's use of the MTO left-turn movements, indicate a northbound left turn lane is warranted at the easterly intersection of King Edward Street and Dundas Street, however, the future traffic volume warrants for a traffic signal is not met.

- Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010 for the updated analysis. It is recommended that a northbound left-turn lane at the King Street and Dundas Street West easterly intersection be constructed. The original application also included the connection of Street C to Dundas Street which would have warranted the installation of traffic control signals at the King Street and Dundas easterly intersection. However, in response to the County's decision that these lands not be made available for use as part of the development, the connection of Street C to Dundas Street has been removed from the application and therefore the traffic control signal at this location is no longer warranted.

The County of Brant Transportation Master Plan assessed the County traffic assessment for horizon years 2008 to 2031. A review of the County of Brant Transportation Master Plan and County of Brant Official Plan did not reveal any intersection improvements identified for the intersection of King Edward Street and Dundas Street West.

It also important to note that since the site traffic volumes were over estimated in the assessment, it is likely the intersection assessment and the resulting delays presented in the intersection could be lower than presented.

- Comment noted. It should also be noted that recent roadway improvements to King Edward Street near Dundas Street were made to improve the flow of traffic along King Edward Street in the vicinity of the proposed development.

***Comments***

GENIVAR's review of the traffic study recommends the following:

57. The traffic volumes at the easterly intersection of King Edward Street and Dundas Street West should be revised to incorporate the appropriate level of site traffic.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010.

58. The easterly intersection of King Edward Street and Dundas Street West should be reassessed based on the revised traffic volumes and the new levels of delays reviewed to determine if the eastbound left-turn movement will continue to experience long delays.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010.

59. The signal warrants for the easterly intersection of King Edward Street and Dundas Street West be revised to incorporate the new traffic volumes.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010. Signalization remains unwarranted.

60. Traffic signals at the easterly intersection of King Edward Street and Dundas Street West should only be installed if one or more of the seven signal warrants outlined in OTM Book 12 are met.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010. Signalization remains unwarranted.

61. The warrants for the northbound left-turn lane on King Edward Street at Dundas Street West be revised based on the new traffic volumes to determine whether the left-turn lanes are still warranted.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm

Transportation Solutions Limited, dated September 29, 2010. A northbound left-turn lane with 30 metres of storage is warranted under total traffic.

***Additional Comments:***

62. What is the timing for the construction of the recommended improvements (i.e. traffic signals, northbound left-turn lane) to the King Edward Street & Dundas Street West easterly intersection?

    - The recommended traffic improvements will be addressed through the draft plan agreement.

63. Should pedestrian movement be analysed as part of this development?

    - The proposed development includes various accommodations for pedestrian movement, including sidewalks that connect with existing sidewalks in the surrounding context and a dedicated pedestrian trail connecting the development to Lions Park and downtown Paris.

64. Section 3.0 (Development Concept) — The anticipated 5-year timeline until full occupancy for these developments is too aggressive.

    - It is anticipated that the build-out of this development will take in the order of seven to ten years. This is not expected to alter the conclusions or recommendations of the Traffic Impact Assessment and addendum.

65. Figure 6a (Site Traffic AM Volumes) — No site traffic is provided for Barker Street, which is unrealistic.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010. Site traffic has been reassigned.

66. Figure 6b (Site Traffic PM Volumes) — No site traffic is provided for Barker Street, which is unrealistic.

    - Please see the enclosed Traffic Impact Study Addendum, prepared by Paradigm Transportation Solutions Limited, dated September 29, 2010. Site traffic has been reassigned.