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# Memorandum

**To/Attention** David Sisco **Date** May 25, 2010  
**From** Matt Colwill **Project No** 19672  
**cc** Ron Stewart **Steno** mrwc  
**Subject** Peer Review Comments - Township of Woolwich

The following addresses comments related to the May 2008 report Traffic Operational Review – Hunsberger Pit, as submitted by the Township of Woolwich, prepared by HDR/iTRANS. Please note that some of the responses indicate the need for further input from you or others.

#	Comment	Responses
1	On page 3 the turning movement count for Sawmill Road at St. Charles Street is noted as being undertaken on November 27, 2002. There is no indication whether the Township approved a count this old. The Region's requirements state that traffic counts should be no more than two years old. There is concern with respect to the time of year two of the turning movement counts were undertaken and the potential extent of seasonal variation in the traffic volumes, with the higher volumes occurring in the summer months. The traffic study should provide a comparison of summer and annual average traffic volumes on area roadways, including the haul route.	New counts were taken in 2009, and the data collected were used for the analysis presented in the February 2010 addendum. If summer and annual average traffic volumes are available for the study area roadways, a comparison of those data with the 2009 count data can be conducted.
2	Residents expressed concerns with respect to traffic infiltration on Golf Course Road as drivers attempt to circumvent the haul routes.	Traffic infiltration on Golf Course Road as a result of haul traffic cannot be measured at this time. However, there are measures that could be applied to mitigate traffic infiltration issues, should they arise (e.g., turn restrictions). Traffic infiltration was not assessed as part of this study. If there is an existing issue with traffic infiltration on Golf Course Road, mitigating measures could be implemented to address the issue, which is not related to the proposed pit.
3	On page 4 the report states "It is expected that trucks will travel east on Sawmill Road through the community, and turn left at the Northfield Drive intersection." This should read "trucks will travel west on Sawmill Road".	The error is noted. The addendum analysis reflects the appropriate cardinal directions.

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4	<p>On page 8 the turning movement volumes illustrated for the intersection of Sawmill Road at Katherine Street and Crowsfoot Road do not include any volumes for Crowsfoot Road. Inspection of the analysis indicates that the Crowsfoot Road approach was not analyzed. There is no discussion explaining this omission. Furthermore, on page 25 it is stated that vehicles on Crowsfoot Road advance into Katherine Street, which creates operational and safety concerns. This approach should be included in the analysis.</p>	<p>It is our understanding the Katherine Street and Crowsfoot Road volumes were combined in the 2006 counts provided by the Region of Waterloo and the relative distributions were not available. The February 2010 addendum shows separate volumes for the two roadways and provides a discussion of how the intersection was treated in the analysis.</p>
5	<p>On page 11 the report states "Given that there was minimal growth within the analysis period, the volumes obtained for the future conditions were lower than those of the existing conditions after the PHFs were applied." The peak hour factor does not affect the hourly volumes arriving at the intersection, but rather the distribution of these volumes throughout the hour. The volumes should not decrease, though the volume to capacity ratio may be lower.</p>	<p>It is true that the input volumes do not decrease from the existing conditions scenario to the future conditions scenario. However, the "adjusted flows," in the analysis program (Synchro), show lower hourly volumes for the future conditions versus the existing conditions, due to the higher peak hour factor used for the future conditions analysis.</p>
6	<p>On page 12 the critical movements are listed in Exhibit 4-2, however no definition or thresholds of what constitutes a critical movement is provided.</p>	<p>The definition of a critical movement/intersection was taken from the Region's TIS guidelines:</p> <p>"The criteria for identifying "critical" intersections are:</p> <ul style="list-style-type: none"> <li>- Overall LOS E or F (i.e. average control delay per vehicle greater than 55 seconds) for signalized intersections; and</li> <li>- Overall LOS E or F (i.e. average control delay per vehicle greater than 35 seconds) for unsignalized intersections</li> </ul> <p>The criteria for identifying "critical movements are:</p> <ul style="list-style-type: none"> <li>- The average control delay for individual movements is greater than 55 seconds;</li> <li>- Estimated 95th percentile queue length for an exclusive movement exceeds the available storage space;</li> <li>- Estimated 95th percentile queue length for an individual movement will block an existing access;</li> <li>- Exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes; and</li> <li>- Poor quality of service for non-auto modes (as per the assessment in section 7.3)." </li></ul>

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7	On page 12 the report discusses the number of trucks per day generated by the site. There is no discussion of staff and customer vehicles.	These volumes are expected to be negligible, with the trips generally occurring outside of the analysis periods. As such, they were omitted from the analysis.
8	On page 12 the Proposed Site Traffic is derived based on an assumed constant extraction rate for the entire year. It is unreasonable to assume there would be no peaking characteristics. Furthermore, trip generation is based solely on the extraction activities, with no consideration given to the asphalt and concrete recycling processes. There is also no justification provided for the trip distribution, particularly since the most direct route to an expressway is to the west.	<p>The addendum contains a more detailed discussion of trip distribution, including analysis of six possible distribution scenarios. The trip generation numbers have also been revised in the addendum to account for changes in proposed operations.</p> <p>In terms of trip generation, the assumption of the pit generating 9 trucks/hour accounts for both 500,000 Tonnes of aggregate and the importation of 75,000 Tonnes of material for recycling [asphalt/concrete] based on the following;</p> $  \begin{array}{r}  575,000 \text{ Tonnes/year} \\  + \quad 195 \text{ operating days/year} \\  = 2,950 \text{ Tonnes per day} \\  \div \quad 12 \text{ operating hours per day} \\  = 246 \text{ Tonnes/hour}  \end{array}  $ <p>There is an existing range of truck sizes typically used in the Region of Waterloo to haul aggregate, from 23 tonnes to 35 tonnes, and therefore, a 30 tonnes truck has been considered the average.</p> $  \begin{array}{r}  246 \text{ Tonnes/hour} \\  \div 30 \text{ Tonnes / load} \\  = 8.2 \text{ trucks per hour}  \end{array}  $ <p>If only smaller trucks were used as suggested by the residents, (25 Tonne), the result would be:</p> $  \begin{array}{r}  245 \text{ Tonnes/hour} \\  \div 25 \text{ Tonnes / load} \\  = 9.8 \text{ trucks per hour}  \end{array}  $ <p>The Traffic Assessment Addendum (Feb. 2010) utilized 10 trucks per hour in the calculations.</p> <p>However, an increase of trucking movements is not anticipated as a consequence of the importation of materials for recycling since the material is primarily the result of back-haul movements.</p> <p>Furthermore, pits typically operate at a reduced rate of their annual permitted extraction rate for most of the pit life, (the 2008 rate was 23.5%). The</p>

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		<p>additional capacity is utilized either as long-term market demand increases or during the height of an exceptional construction boom to avoid having to request a temporary tonnage increase.</p> <p>With regard to peaking of truck traffic generated by the site, it should be noted that although the aggregate source is in a fixed location, the location of the job site constantly changes. The frequency of trucks generated is typically a function of the time it takes for the front-end loader to load each truck, and the truck intervals are wholly dependent upon the distance to the job site and to return to the pit, these variables may change weekly, daily or even throughout the day with the use of different trucks.</p>
<p>9</p>	<p>On page 12, the average load size is stated as 30 tonnes. The source of the average load size is not noted. The range of typical load sizes and types of vehicles which would be expected at the site are also not specified. <b><i>The August 20, 2009 email from IBI indicates that they would revise the average truck size down to 25 tonnes to provide for a more conservative estimation of trip generation from the site.</i></b></p>	<p>See above.</p>
<p>10</p>	<p>On page 15 it is noted that the intersection of Northfield Drive at Sawmill Road "may require signal timing modifications". There is no analysis provided to demonstrate whether signal timing modifications would correct the operational issues at the intersection. This comment was made with respect to Future Background traffic as well. The issue should have been previously addressed and resolved.</p>	<p>The February 2010 addendum provides more detailed discussion of mitigating measures and analysis of those measures.</p>
<p>11</p>	<p>On page 15 the WB movement at the intersection of Northfield Drive at Sawmill Road is not noted as exceeding capacity during the PM peak hour.</p>	<p>The capacity constraints associated with the WB movement at the intersection are addressed in the February 2010 addendum.</p>
<p>12</p>	<p>On page 17 the design vehicle used as the basis for the safety assessment is identified as "a B-12 tri-axle truck". TAC designates a B-12 as a standard bus. Further explanation of the characteristics of the design vehicles is required. To be conservative, each safety criteria should be evaluated based on the worst performing vehicle that will service the site.</p>	<p>The test vehicle was incorrectly identified in the report. It should have been identified as a Heavy Single-Unit (HSU). The sightline analysis was conducted using the TAC standard target and driver's eye heights of 0.38m and 1.05m, respectively.</p> <p>The sightline analysis conducted for the site access was based on an approximate access location. Given the measured sightlines and the required decision sight distance for a 90-km/h design speed, the necessary sight distances can be achieved by adjusting the access location slightly, regardless of lighting conditions.</p>

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13	On page 17 the report notes that the site will be typically operating during daylight hours. The hours of operation for the site are 7 a.m. to 7 p.m. The sunrise time in December can be as late as 8 a.m. and the sunset time can be as early as 4:45 p.m. While these hours will comprise only a small amount of the proposed operating hours throughout the year, the traffic analysis implies that these hours will have the same trip generation as any other hours, and the road conditions are more likely to be less than optimal.	Given that the hours described "comprise only a small amount of the proposed operating hours," no specific mitigating measures (e.g., illumination) should be needed to accommodate the proposed pit traffic. However, the illumination that is currently warranted at the Crowsfoot Corners intersection would provide a benefit to all road uses.
14	On page 20 the collisions that occur during the winter months were discounted since the pit would not be open during winter conditions. This is not a representative collision analysis since winter conditions could occur during times the pit is in operation. This statement is also contradictory to other statements in the study which indicate that the pit will be operational during some winter months.	The collisions that occurred under winter road surface conditions were not discounted. The report indicates that a significant number of the reported collisions occurred under wet, snowy or icy road surface conditions. It also notes that the grades at the intersection could be compounding these effects. As is expected of all drivers, those hauling to and from the proposed pit will be expected to exercise caution in inclement weather. As a positive, the report notes that the proposed aggregate pit is not expected to be in operation during a significant portion of the year when winter road surface conditions are prevalent.
15	On page 20 the collision analysis does not include a collision rate.	Based on the collision (21 collisions in 6 years) and volume (AADT of 5,462) data provided by the Region, the collision rate for the intersection is approximately 1.76 collisions per million entering vehicles. If Region-wide data for similar intersections (of which there may be few or none) is available, a comparison could be done to determine relative safety performance.
16	On page 26 it is noted that "No specific issues with truck turning movements at the intersection were identified in the Region's review [of the intersection conducted in April 2007]." There is no discussion with respect to the truck volumes used in the review and whether they are comparable to the projected truck volumes under the total traffic analysis. The site generated trucks for this pit and other proposed pits in the vicinity - including the Capital Paving property, Kuntz Pit, and Middlebrook Pit are not included in the volumes used in the Region's intersection review.	<p>The Regions review indicates approximately 6% trucks at the intersection. The future total traffic analysis in the February 2010 addendum shows a maximum of 8% trucks at the intersection.</p> <p>Our understanding of the Martin Pit application is that it is a pit expansion by D &amp; J Lockhart Excavators Ltd. and the following is noted in the Planning Summary Report in support of the application, "<i>When considering potential traffic impacts resulting from the proposed pit, it is important to note the proposed annual tonnage limit is the same as the current license for the existing pit.</i>"</p> <p>Therefore, the truck volumes generated by this application are already part of the existing traffic counts.</p>

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17	On page 26 the report states "Notwithstanding that the intersection of Hunsberger Road and Katherine Street will not be used by haulage trucks ..." The proposed site access is north of the intersection and all vehicles are projected to head south. The road also bisects the property, with no alternate access noted. It would be necessary for trucks to cross Hunsberger Road; however there is no discussion or analysis of the traffic and safety impacts of the required access.	The proposed Hunsberger Road crossing (for Phases 2 and 3) is identified on the Site Plans. Based on a standard eye height of 1.05m and an object height of 0.38m, the sightline from the exit /entrance is 280m to the west and over ¾ km to the east, with the distance requirement for a WB-15 being less than 250m for a 90 and 100 km/h design speed.
<b>General comments about the compliance of the report with Official Plan Amendment No.13 are as follows:</b>		
18	Specific Town, Region, and provincial policies that need to be addressed by this study are not identified.	It is not clear if this comment relates to traffic or to other concerns related to the proposed pit.
19	The proposed haul routes are implied through the traffic assignment, but not specifically described. Residents have expressed concerns with respect to traffic infiltration on Golf Course Road as drivers attempt to circumvent the haul routes. The traffic study should comment on the propensity of motorists to take alternative routes based on the reserve capacity and level of service of the haul routes. A time-distance calculation should also be made to demonstrate the potential time savings, if any, to motorists should they use Golf Course Road as a means to by-pass the haul route.	See response to comment 2, above.  No comparative travel time studies have been conducted; however, the travel distance via Golf Course Road is shorter.
20	The land uses and types of impacts for the road network are included.	No response needed.
21	There is no evaluation of haul routes or alternate haul routes.	All site traffic is expected to travel south from the site access, along Katherine Street. The only possible alternative is for haul traffic to proceed northbound on Katherine Street. However, this would result in unnecessarily traveling through Winterbourne and West Montrose, and still having to traverse the Northfield Road/Sawmill Road intersection in Conestogo to reach the market, and this would require traveling an additional distance of 9.0 km to reach the same destination.
22	The physical characteristics of the road are not noted. There is no discussion of load limits or surfacing. Any existing load restrictions, or lack thereof, should be identified. The physical constraints are discussed through the sight line analysis.	Katherine Street, Sawmill Road, and Northfield Drive are all Regional roads, intended to accommodate truck traffic year round.  Operational Note No. 4 (5 <sup>th</sup> bullet) of the Site Plans states the following; <i>"Prior to extraction of Phase 2 and after extraction of Phase 3, geotechnical boreholes are to be drilled within the subject portion of Hunsberger Road and if any significant deficiencies are noted, the licensee shall repair the road at their costs. Furthermore, if any visual</i>

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		<i>impact is caused to the road during the extraction period, they shall also undertake the necessary repairs to Township standards”.</i>
23	Anticipated increases in background traffic and traffic due to the extraction operations were included. The cumulative impacts from the proposed Jigs Hollow pit were included in the background traffic volumes. The site traffic from the Capital Paving property, the Kuntz Pit, and the Middlebrook Pit were not included. Site generated traffic included haul trucks only. No employee vehicles were accounted for.	The February 2010 addendum accounts for site traffic generated by other proposed operations in the area. No employee trips were included in the analysis (see comment 7).
24	A horizon year of 2020 was used.	No response needed.
25	The operational traffic impacts were noted, however they were not resolved. The physical traffic impacts with respect to sight lines were addressed. The physical traffic impacts with respect to the road structure were not included in the study.	The February 2010 addendum provides more detailed discussion of mitigating measures for operational traffic impacts.
26	There is no discussion of pedestrians, cyclists, and horse-drawn carriages. Due to the proximity of the West Montrose Mennonite all of these modes of transportation are likely to be present despite the rural nature of the roads.	All of the modes noted are part of the existing traffic composition of the greater study area, as are heavy trucks. That is not expected to change.
27	The proposed hours of operation exceed those permitted by the noise by-law. An adjustment in hours of operation will impact the site trip generation. This should be taken into consideration and the traffic analysis should be revised accordingly.	The February 2010 addendum addresses changes in the proposed operations.
28	The costs of improvements were not included in the report and the need for an Environmental Assessment was not addressed.	Costs have not been assessed as part of this study. The proponent cannot initiate an EA; therefore, it would be up to the Municipality/Region to determine the need for one.
29	While impacts to the Natural Environment (air quality, terrestrial heritage, aquatic heritage) and Social Environment (noise, vibration, cultural heritage) may not be directly attributable to increases in traffic associated with pit operations, other related studies are needed to provide an overall assessment of the cumulative impacts from the pit. The traffic component must be considered with the other related assessments (Natural Environment Technical Report, Hydrogeological Assessment Report, Dust Assessment Report, Aggregate Resource Inventory, Acoustical Assessment, Archaeological Assessment, MNR Recycling Policy, Cultural Heritage Landscape Assessment).	Agreed, other studies should consider the impacts of site generated traffic.