September 18, 2015

Mr. Marco Ramunno, MCIP, RPP
Director of Planning & Development Services
Town of Aurora
100 John West Way
Aurora, Ontario
L4G 6J1

Re: Highland Gate Community Residential Development
Town of Aurora
Transportation Considerations
Peer Review ***Project No. 15.216***

Dear Mr. Ramunno

Poulos & Chung Limited (PC) has completed a "Peer Review" of the Highland Gate Community Residential Development; Transportation Considerations Report dated February 2015 authored by BA Group (BA).

As indicated in the title of the report; this study has undertaken an assessment of the transportation system which provides direct service to a proposed infill development. The work completed has been used to guide development thinking and accommodation of all modes of transportation.

The report contains:

- A review of existing walking and bicycling infrastructure;
- Determination of vehicle trips to be generated by the infill development;
- Analysis of roadways and intersections providing vehicular access;
- Analysis and assessment of internal roads;
- A parking strategy;
- Brief review of the condominium driveway access location and Golf Links Road;
- Transportation Demand Management Considerations, and;
- Identification of proposed new streets to service the infill development.

It has been prepared as a part of a proposed Draft Plan of Subdivision application and Official Plan and Zoning By – law amendment. To accomplish this, the report uses standard process steps contained in a typical Traffic Impact Study. It is understood however, that this report, although providing sufficient detail for feasibility assessment and evaluation, it does not contain the full

methodology expected of a Traffic Impact Study. It is appropriate for development planning and decision making at this stage of the application process.

We respect this and our comments are in keeping with the approach used.

Therefore our comments and input are based upon:

- Following the analysis approach used in the report but applying standard measurement criteria applicable to elements of a traffic impact study;
- The use of parameters and standards as contained in the Geometric Design Standards For Ontario Highways Manual published by the Ontario Ministry of Transportation;
- Respecting the appropriate elements of the Traffic Impact Study Guidelines as published by York Region;
- Our knowledge of the existing and planned area transportation system as defined by the Town of Aurora and York Region.

The following sections contain our comments and input.

The sections are organized and sequenced in a similar fashion to the Chapters of the BA report.

1. Setting

The proposed development is located between Bathurst Street to the west and Yonge Street to the east. These two roads are under the jurisdiction of York Region and are classified as arterial roads.

Essentially the infill development utilizes the open space areas of the Highland Gate Golf Club. The development is formed within seven open space areas. Access to the areas is provided via new roads with connections to existing roads. All of the existing roads within the study area are classified as local roads and are under the jurisdiction of the Town of Aurora.

Golf Links Drive is also classified as a local road, however it does connect directly with Yonge Street and the intersection at Yonge Street is controlled by a traffic signal. As a result it is our opinion that the eastern segment of Golf Links Drive provides more of a minor collector road role and function.

The area is well served by transit. York Region Transit provides regular scheduled services enhanced with GO shuttles, community buses and high school, college and university services.

VIVA operates a bus rapid transit service on Yonge Street connecting the Newmarket GO Bus Terminal with the Finch GO Bus Terminal. The VIVA service on Yonge Street will continue to expand service capability in the coming years.

The existing streets within the study area have sidewalks on one side with the exception of Highland Gate which has no sidewalks and Murray Drive which has sidewalks on both sides. A

trail system network is available in the immediate area consisting of off – street trails and roadway rights – of- way.

2. Proposed Development

The BA transportation assessment evaluated:

- 184 single family homes;
- 144 dwelling units in a condominium building.

The proposal is a residential infill development of the Highland Gate Golf Course lands.

The proposed development is essentially centered along Golf Links Road and Cranberry Lane / Timberline Trail. Murray Drive a north south collector road essentially bisects the infill development.

The infill areas are proposed to contain anywhere from 3 residential dwelling units to 76 dwelling units.

One of the areas fronting directly onto Golf Links Road in close proximity to Yonge Street is proposed to contain 144 dwelling units in a condominium building.

Another of the areas (Area 7), the existing golf clubhouse parking lot is to be retained and used as visitor parking for the condominium building. Area 7 is located north of Golf Links Drive.

3. Traffic Volumes

3.1 Existing Traffic

The road and intersection analysis is based on vehicle turning movement counts conducted at twelve intersections. The intersection counts were conducted by the Region of York and BA Group. The typical weekday roadway peak periods are accounted for. The intersection turning movement counts are very recent and considered appropriate and accurate for use in the analysis conducted.

The existing traffic control devices and the available roadway lanes and intersection lane configurations have been correctly identified.

3.2 Future Background Traffic

3.2.1 Specific Background Developments

The Town of Aurora provided a 2014 planning application list for planned or approved developments in the immediate area of the site.

The vehicle trips generated from these planned or approved developments has been estimated and included as part of future background traffic growth. This is further discussed in the following section.

3.2.2 Corridor Growth

In addition to the above traffic flow growth estimated for planned and approved area developments, a further increase was made to existing traffic flows on Yonge Street and Bathurst Street to account for area wide growth.

BA Group consulted the Town of Aurora Master Transportation Study Update (2013) for corridor growth rates along Yonge Street and York Region Transportation Master Plan EMME II model outputs for both Yonge Street and Bathurst Street. BA Group synthesized the information and concluded that an annual growth rate of three (3) percent per year for a period of five (5) years should be applied to the existing traffic flows on Yonge Street and Bathurst Street. This would then form background traffic flows for a 2020 horizon year analysis. To this, the traffic from the planned and approved developments was added

We find this analysis approach reasonable, if not conservative to estimate horizon year 2020 typical weekday background traffic flows on Yonge Street and Bathurst Street.

We have replicated this background growth rate analysis and determined that the Yonge Street traffic flow projections are accurate and that the Bathurst Street traffic flow projections are within 10 vehicles of our calculations in each direction of travel in each roadway peak hour.

We therefore conclude that the forecast background traffic forecasts are accurate.

It is very likely that the forecast traffic flows do contain vehicle trips resulting from the existing Highland Gate Gold Course during the summer months. No attempt has been made to reduce these vehicle trips from the forecast traffic flows. This is reasonable and continues to maintain a conservative analysis approach.

3.3 Site Traffic

3.3.1 Trip Generation

BA used two acceptable methods for determining the vehicle trips to be generated by the proposed development.

The first method involved conducting traffic surveys on roads within the Aurora Highlands neighbourhood. The recorded vehicle movements were related to the known 270 existing single family homes that are located within the community.

This allowed a vehicle trip generation rate to be determined per single family dwelling unit during the typical weekday roadway peak hours. This generation rate was then applied to the new single family dwelling units contained in the Draft Plan of Subdivision.

The second method involved the use of a vehicle trip generation rate (Code 320) contained in the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). The use of this ITE Manual and the Code contained therein is considered appropriate and acceptable.

The observed vehicle generation rate and the ITE code have been accurately applied to the proposed development statistics to determine the new vehicle trips to be generated during the roadway peak hours of a typical weekday.

3.3.2 Trip Distribution and Trip Assignment

The distribution of vehicle trips resulting from the new development is based upon 2006 Transportation for Tomorrow Survey results. We find this approach acceptable and consistent with analyses conducted in the Town of Aurora and York Region.

Using the defined trip distribution patterns the new traffic was assigned to internal roads and then to Bathurst Street and Yonge Street using the available and planned internal roadway network. Vehicle turning movements at the Bathurst Street and Yonge Street intersections was based upon the determined distribution patterns.

We found that the new trips resulting from the proposed development have been correctly assigned to the internal roadway network and result in accurate turning movements at all intersections.

3.4 Future Total Traffic

The new vehicle trips from the proposed development are added to the forecast horizon year background traffic flows. This resulted in the total traffic flows to be analyzed in the typical weekday roadway peak hours.

We found that the traffic flows were correctly added.

The total traffic flows representing horizon year 2020 conditions are therefore considered to be accurate and acceptable for analysis and evaluation.

4. Intersection Operations Analysis

BA in the report:

- Used the Synchro Software Version 9 as the analysis tool to analyze all intersections. We find this acceptable and is considered to be the standard tool for use in the Town of Aurora and York Region;
- Presented signalized and unsignalized intersection nomenclature used to describe the performance of intersection operations. We find the descriptions acceptable and consistent with industry standards.

4.1 Signalized Intersections

The following intersections were analyzed in detail:

- Yonge Street and Golf Links Drive / Dunning Avenue;
- Yonge Street and Kennedy Road;
- Yonge Street and Brookland Avenue;
- Yonge Street and Murray Drive / Edward Street.

The analysis was conducted for the typical weekday peak hours and examined in detail each of the following conditions:

- Existing traffic flows;
- 2020 traffic flows consisting of background traffic;
- 2020 traffic flows consisting of background traffic plus proposed development traffic.

Each available traffic movement was analyzed.

The analysis outputs indicate:

- All intersections for each condition analyzed resulted in very good overall level of service;
- No one traffic movement was found to have an operational difficulty and all traffic movements have ample reserve capacity even when examining the 2020 total traffic flows.

Poulos & Chung Limited independently conducted the intersection capacity analysis and replicated the outputs.

It is therefore concluded that the signalized intersection analysis has been correctly done and that the output results are accurate.

The conclusion that the new development results in a very modest incremental increase in intersection operating capacity (signalized intersections) is accurate and acceptable.

4.2 **Unsignalized Intersections**

The following intersections were analyzed in detail:

- Bathurst Street and Highland Gate;
- Highland Gate and Timberline Trail / Cranberry Lane;
- Murray Drive and Trillium Drive;
- Murray Drive and Golf Links Drive;
- Murray Drive and Seaton Drive;
- Murray Drive and Nisbet Drive;
- Kennedy Street and Highland Court;
- Kennedy Street and George Street (South);
- Kennedy Street and George Street (North);
- Murray Drive and Fairway Drive.

The analysis was conducted for the typical weekday peak hours and examined in detail each of the following conditions:

- Existing traffic flows;
- 2020 traffic flows consisting of background traffic;
- 2020 traffic flows consisting of background traffic plus proposed development traffic.

Each available traffic movement was analyzed.

The analysis outputs indicate:

- All intersections for each condition analyzed resulted in very good overall level of service;
- No one traffic movement was found to have an operational difficulty and all traffic movements have ample reserve capacity even when examining the 2020 total traffic flows.

Poulos & Chung Limited independently conducted the intersection capacity analysis and replicated the outputs.

It is therefore concluded that the unsignalized intersection analysis has been correctly done and that the output results are accurate.

The conclusion that the new development results in a very modest incremental increase in intersection operating capacity (unsignalized intersections) is accurate and acceptable.

5. Parking Strategy

This section deals with the parking provision for the pockets of development containing single family homes.

Poulos & Chung Limited is very familiar with:

- Town of Aurora Zoning By – Law 2213 – 78 which requires a minimum of one (1) off street parking space per dwelling unit and no parking on Town roads in the morning hours of the winter months of the year (singles, semis and townhouses);
- Town of Aurora Parking Policy stating a minimum requirement of three (3) parking spaces off street per dwelling unit (singles, semis and townhouses;
- The parking supply review conducted for the Aurora 2C West lands.

The BA Group report suggests:

- The provision of three (3) parking spaces per dwelling unit through the provision of both off street and on street parking spaces, and;
- The preparation of a detailed parking supply plan in context with the completion of engineering work assessing internal roadway pavement widths and storm water management objectives.

Poulos & Chung Limited is of the opinion that such an approach is reasonable.

The approach however, should be guided by typically accepted standards.

That is:

- The off street parking supply for singles, semis and townhouses should be a minimum of two (2) parking spaces per dwelling unit;
- The adjacent roadway should be capable of providing between 0.25 and 0.35 parking spaces for visitors;
- A select By – Law permission to permit on street parking for a residential dwelling unit is essentially a request to define an area resulting from bump outs and storm water management treatments.

It is evident that detailed design plans during the engineering submission stage will provide the decision making information.

6. Area 6 Considerations

6.1 Preliminary Concept Plan

Area 6 is envisioned to contain a 10 storey condominium building. A total of 144 dwelling units are proposed.

Two full vehicle turning movement intersections are proposed for the condominium building.

The entrances generally match the location of the existing driveways serving the existing golf club building.

- The first entrance is approximately 165 meters west of Yonge Street, and;
- The second entrance is approximately 40 meters further west.

It is noted in this section of Golf Links Road that:

- The centre line of Golf Links Road forms an "S" curve with radii of approximately 40 meters from the western edge of Area 6 to Yonge Street;
- Such radii are consistent with local road standards;
- The approximate Golf Links Drive centre line distance from the Area 6 west driveway to Yonge Street is approximately 200 meters. Within this 200 meter distance there are existing four (4) driveways on the south side and three (3) driveways on the north side of Golf Links Road;
- All driveways permit full vehicle turning movements

The proposal confirms retention of the three (3) driveways serving Areas 6 and 7 and does not touch the remaining four (4) driveways that serve existing developments.

6.2 Driveway Operations Analysis

Intersection capacity analyses were completed for the driveways serving the proposed development on Area 6 and 7.

The capacity analysis has been reviewed and it is confirmed that the analysis is correct.

6.3 Driveway Location Review

BA Group conducted a vehicle sight line assessment at each of the Area 6 driveway location using standard vehicle stopping and turning decision making criteria.

The principles of The Geometric Design Standards Manual For Ontario Highways published by the Ontario Ministry of Transportation states was used as the basis for evaluating the decision making criteria.

The analysis verifies that required decision making criteria are satisfactorily achieved based upon the existing centre line curvature, grades and decision making distances available.

In effect this analysis describes what exists today. Vehicle flows on Golf Links Drive operate under these conditions. The geometrics of the road do not change and the new driveways are proposed to remain in the same location. Hence the forecast traffic flows will face the same operating condition.

BA Group provides a brief discussion of observed vehicle operations on Golf Links Drive. The discussion primarily focuses observed vehicle queue lengths especially those caused by the Tim Horton's drive – through operation.

Overall the observations indicate that the roadway and intersection operate very well. The observations did indicate that once or twice in the AM peak hour that Tim Horton inbound traffic would queue momentarily onto Golf Links Drive. This queue, which is infrequent, does not impact the primary community vehicle movement which is outbound towards Yonge Street.

We concur that the proposed development traffic flows are not adversely impacted by existing conditions.

6.4 Parking (Area 6)

The proposed parking supply (for the condominium building) is in conformity with Aurora By – Law 2213 – 78.

Our opinion is that this building with its close proximity to increased Yonge Street rapid transit services has a better chance of succeeding with a reduced parking supply than the single family homes dispersed throughout the application area.

7. Area Internal Street Impact Assessment

Automatic Traffic Recorder (ATR) counts were conducted for a twenty – four hour period at several key locations within the application area.

We found this information most useful and beneficial to the Peer Review process.

In our opinion this information is also most useful to:

- Identify current vehicle volumes on all local roads;
- Provide an accurate assessment and evaluation of total vehicle flows once the new development traffic is added;
- Provide an accurate confirmation that the total vehicle flows when including the proposed development allows each of the local roads to maintain their role and function.

Table 22 in the BA Group report has been carefully reviewed.

We can confirm the accuracy of the numbers contained in Table 22.

It is evident from this detailed analysis that only one road segment approaches / equals the acceptable daily traffic volume threshold. That is Golf Links Drive west of Yonge Street.

It is evident to us when taking into account our comments contained in Section 6 of this Peer Review and our comments in this section that:

- Overall, with the proposed development all intersections can adequately accommodate total vehicle demands at very good operating conditions. Intersection operations are not a concern;
- Even with Golf Links Drive accommodating higher traffic flows than the other internal roads, it is evident that the operation capability of the Golf Link Drive and Yonge Street intersection is not a concern. It has more than sufficient capacity to accommodate total demands.

8. Transportation Demand Management Considerations

An initial indication of Travel Demand Management (TDM) strategies is provided.

We concur with the approach.

When a Site Plan comes forward the TDN plan will be finalized.

The Town of Aurora and York Region have set procedures and measures upon which the TDM plan is to be based.

Physical and soft TDM measures will be identified. Estimated costs for the measures will be provided and the responsibilities for implementation, education and monitoring will be identified.

9. Proposed New Streets

The infill development requires the construction of new streets to provide access to the various pockets of new homes.

We concur that this is necessary.

It is suggested that these new streets have a right – of –way 0f 17.5 meters. Such a cross – section is reasonable and capable of satisfactory serving all primary modal demands.

We are familiar with this standard and know that it has been successfully employed in many locations.

It is noted that consideration will be given to pavement width adjustments in order to achieve storm water management objectives. This seems reasonable respecting the fact that traffic flows during all times of a day will be very low on these streets.

A discussion is brought forward with respect to cul–de–sac lengths. From a traffic operations perspective we conclude that with the very low traffic flows that the length being considered is not of concern. The most important input in this case would be that of the Fire Chief.

10. Conclusions

The report provides numerous conclusions under several headings.

Our comments are as follows:

Traffic Operations

We concur with the conclusions provided by the BA Group.

Upon reviewing all intersections whether they be signalized or unsignalized, the forecast traffic flows which include existing traffic, background growth incorporating planned area developments and growth in existing traffic plus the planned development indicate that:

- Satisfactory operating conditions are achieved during the typical roadway peak hours;
- All vehicle movements can be adequately accommodated with little if any vehicle delay;
- Ample reserve capacity is available.

Internal Street Analysis

We concur with the conclusions provided by the BA Group.

All study area roads can maintain their role and function within the defined classification level.

It is mentioned, as indicated by our comments as well, that the eastern end of Golf Links Drive (with its traffic signal control at Yonge Street) operates more as a collector road both in quantity of traffic flows carried and in function.

Since the total traffic volumes on Gold Links Drive are still at reasonable and within acceptable levels we believe that the continuation of existing conditions is appropriate.

Parking Considerations

We respect the BA Group recommendation that the parking supply within Areas 1 – 5 can be verified when taking into account overall pavement width and storm water management analysis.

We recognize that traffic flows on these roads will be very low and flexibility can exists to undertake such an approach.

The parking supply for Area 6, the proposed condominium building is very straight forward and in keeping with the By – Law standards of the Town of Aurora.

The ability to use Area 7 as the location for visitor parking to serve the condominium building is a matter marketing acceptance, control and enforcement.

The feasibility to employ the use of parking bump out locations should be verified to confirm minimal disruption to traffic flows and emergency vehicle circulation capability.

Transportation Demand Management (TDM) Strategies

The report provides an overview of TDM strategies and plans which are acceptable.

As is the case for all development submissions once the details are finalized an updated TDM plan will be prepared and submitted for review by the Town of Aurora and York Region.

Proposed New Streets

We concur with the conclusions presented by the BA Group. The cul–de–sac length is not of a concern form a traffic operations perspective. It should require review and commentary from the Fire Chief. (As well the proposed bump out on a 17.5 meter cross-section should be reviewed with the Fire Chief).

We thank you for choosing Poulos & Chung Limited to undertake this Peer Review.

Please do not hesitate to contact us should there be a need to have questions addressed or provide further clarification.

Yours Very Truly

Nick G. Poulos, P. Eng.
Partner

Norman Q. Chung, P. Eng.
Partner