

TECHNICAL MEMO

To

Samantha Maki
City of Pitt Meadows

Prepared by

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Branch 2111 / Traffic and Road Safety

Reviewed by

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Re

Peer Review of "Golden Ears Business Park, Pitt Meadows – FINAL Access Assessment, August 31, 2020" prepared by Creative Transportation Solutions.

Date

September 29, 2020

Reviewer: Ahmad Afzal Puri, P.Eng., RSP1

Address: 2300- 13450 102 Avenue, Surrey BC

Area of Expertise: Transportation Engineering

Education & Qualifications: Master of Engineering (Civil), Carleton University

I am a registered Professional Engineer (P.Eng.) in British Columbia (Registration # 39879). I have 15 years' direct experience in the field of transportation planning, traffic engineering and operations. I am a Senior Traffic Engineer at McElhanney Ltd. McElhanney has been providing consulting services since 1910. I am considered by my peers to be an expert in the field of traffic impact assessments / Traffic Modelling and to date, have completed numerous such studies.

Opinion Sought: As a professional transportation engineer, to provide my opinion on the report titled "Golden Ears Business Park, Pitt Meadows – FINAL Access Assessment, August 31, 2020" prepared by Creative Transportation Solutions (CTS), and prepared for Onni Group.

OPINION

1. Page 7 Section 4.0 (GEBP – Phase 3 and Phase 4 Site Layout, 3rd Bullet).

In regard to the delivery persons and operators access to delivery and loading bays the report states that “Onni is proposing two all movement driveways on Airport Way i.e. one for GEBP - Phase 3 and one for GEBP - Phase 4, and one all movement driveway on Harris Road i.e. one for GEBP - Phase 3, for this purpose.” However, the site layout drawing shown in Appendix A indicate three heavy vehicle access driveways on Airport Way (one for GEBP- Phase 3 and two for GEBP Phase 4) which contradicts the proposed accesses for heavy vehicles on Section 4.0.

FINDING. *The site layout drawing may be amended to show the heavy vehicle access to GEBP – Phase 4 from the Airport Way eastern driveway only.*

2. Page 17 Section 7.1 (Capacity Analysis Assumptions 2nd bullet).

A 5% heavy vehicle percentage is assumed for all truck access point movements on Airport Way and Harris Road. Since the driveways are primarily used for the delivery and other heavy vehicles 5% truck percentage may be considered low. CTS in response to the City’s initial feedback started “*while there will be more medium to heavy trucks on the road network than typically, 5% is appropriate for analysis as it refers to vehicles having three or more axels e.g. semi-tractor trailers, and typical heavy vehicle volumes used for analysis on highways is 2% to 3%. Also 2016 analysis used 5% trucks*”.

FINDING. *The 2016 Report (South Bonson Traffic Study) used 5% trucks, but the access intersection analysis was not in the scope of 2016 study. While 5% trucks for the thru traffic on Airport Way and Harris Road is appropriate, the proposed heavy vehicle access points for GEBP Phase 3 & 4 may experience more than 5% trucks for the turning movements as these accesses are designated for the truck traffic only. Consider increasing heavy vehicle percentage at the truck access intersections for the in/out turning movements to at least 25% to appropriately represent the intended use of these truck access points on Airport Way and Harris Road.*

Resolution. *Based on the finding, CTS has revised the truck percentages to 15% for all truck access point movements on Airport Way and Harris Road. All other access points were assumed to be zero heavy trucks.*

3. Page 9 Section 4.0 (Access Assessment – Corner Clearance).

The CTS report states that “*Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads 2017 the minimum clearance from a driveway to the intersection of two arterial roads i.e. Airport Way and Harris Road, is 70 meters*”. However, per TAC the 70m clearance requirement is for roads at an operating speed of 50 km/h. For higher speed roadways, clearances of up to two times the values stated may be desirable. Greater



corner clearances may also be warranted by the estimated queueing at the intersection, based on the proposed traffic control, number of lanes and anticipated traffic volumes.

FINDING. *As operating speeds on Airport Way and Harris Road may be higher than 50 km/h, corner clearance of more than 70m can be considered.*

4. Page 28 Section 8.2 (Analysis: Table 10).

As indicated in Table 10 and subsequent analysis on Page 31 for Airport Way/ Harris Road intersection, the 95th percentile queue for the southbound left turn movement is expected to be #65m and #155m in 2024 and 2035, respectively. The distance from the southbound stop bar to the southern access for GEBP-Phase 3 on Harris Road is about 110 m, which means the southbound left turn queue will block the heavy vehicle access point and may pose capacity and safety concerns at the access intersection. The Synchro model shows the # symbol besides the queues which indicates that the 95th percentile volumes exceeds capacity; queue shown is maximum after two signal cycles and the actual queue during the peak hour can be longer. It is noted that the accesses on the east side of Harris will also be impacted and may get blocked by the southbound queue. As Synchro analyzes the individual intersection in isolation, SimTraffic simulation results may be more appropriate for analyzing the impact of southbound queue on the adjacent access driveways provided the driveways are also included in the same Synchro model.

FINDING. *It is recommended to include the driveway intersections to the Synchro models and analyze the traffic impacts between adjacent intersections /access points. SimTraffic queue analysis is also recommended to gauge the actual traffic impact on the study area. If southbound traffic at Airport Way /Harris Road intersection blocks the access intersection, consider restricting the Heavy Vehicle access point on Harris Road to right-in-right-out movements only or shifting the access further north.*

Resolution. *Based on the finding, CTS has revised Synchro model to include Access Driveways in the model and provided SimTraffic simulation recordings showing all access intersections operating with acceptable queueing. Furthermore, in the revised development scenario the full buildout by 2035 will only include the 1.24M sqft development, not the original 1.8M sqft. This revised demand has significantly reduced the trip generation and improved queueing at the study intersections.*

5. Page 25 Section 8.2 (Analysis – Table 8).

CTS analyzed the intersection of Airport Way and the Sutton Development/Park Amenity Access as STOP controlled intersection. CTS assumed the volumes in/out of the Amenity Lands Access to be 2 vph for all turning movements. CTS response to the City's initial feedback was that "Changing to 5 or 10 vehicles ingressing/egressing the amenity lands does not change the analysis. Also, the peak hours for the park amenity will be evenings and weekends". However, a



slight increase in the side street stop-controlled volumes can significantly affect the level of service and queue levels at the intersection with arterials. The four lane Airport Way cross-section will make it harder for the side street stop-controlled movements, especially, for the left-outs as the driver has to judge and accept gap in larger cross-section.

FINDING. *Consider conducting a sensitivity analysis to test increased turning movement volumes in/out of the amenity lands access and the resulting impacts on delays and queues.*

Resolution. *Based on the finding, CTS has revised the vehicle trips generated by the proposed park amenity to 20 vehicle trips inbound and 20 vehicle trips outbound for both the morning and afternoon peak hours.*

6. Analysis Software.

CTS used HCS software to model the unsignalized intersections and Synchro was used for the signalized intersections. Although HCS and Synchro both use HCM methodology, modeling all intersections in Synchro would give the opportunity to analyze the system wide traffic impacts for the study area/corridors. The traffic impacts on closely spaced intersections/driveways along a corridor cannot be analyzed in isolation. SimTraffic simulation can help visualize the impacts of one intersection on the adjacent intersections/access points and help analyze if the queue at one intersection will spill back and block the adjacent intersections / driveways.

7. **FINDING.** *The report does not talk about the adjacent intersection operational impacts which is important for the corridor analysis. Please include a commentary on the adjacent intersection impacts based on the Synchro and HCS results. Alternatively, the access driveways can be included in the Synchro model for the combined traffic scenarios (2024 Base + Site & 2035 Base + Site).* General Comments.

Some general comments are provided below for your consideration:

- None of the proposed Phase 3 and Phase 4 access intersections has left turn storage lanes on Airport Way and Harris Road. Left turn storage lanes become critical for closely spaced intersections specially on a two-lane road cross-section. For example, a single SB left turning truck at the Phase 3 Harris Road South Access can block the southbound thru traffic if there are not enough gaps in the opposing northbound traffic. Left turn lane warrants should be checked at all proposed access locations.
- Design vehicle Swept path at some accesses looks constrained. The design vehicle swept path encroach into the opposing lanes to negotiate the turn in most cases. In some cases, the right in truck cannot enter the access driveway if there is a truck waiting for a gap to make the left out turn. Access widening may be considered to keep the swept path encroaching in to opposing lanes.



- Side street delays at some access intersections are excessive. For example, as shown in Table 7 at Page 24 of the report, at the Airport Way / West Access intersection the northbound traffic average delays in the PM peak hour is about 260 sec/vehicle with about 10 vehicles long queue. Although the queue is contained within the GEBP property, the excessive delays add to driver frustration which leads to unsafe turning vehicles driver behaviour by accepting inadequate gaps in thru traffic.

Resolution: *Based on the revised development scenario the full buildout in 2035 will only include the 1.24M sqft development, not the original 1.8M sqft. This revised demand has significantly reduced the trip generation and improved queueing at the study intersections.*

Closing

The information within this memo is based on a high-level review of the Assess Assessment study for GEBP Phase 3 and 4 conducted by CTS. Review of the Preliminary Design Drawings included in Appendix D of the CTS report is not the scope of this review. This is not a safety audit of the design elements and all onus for the design is on the designer. Please contact the undersigned if you have any questions regarding this technical review.

McELHANNEY LTD.

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