

2. VMC Tech Note

To	Selma Hubjer (City of Vaughan) Dick Gordon (AECOM)	Project	Vaughan Transportation Master Plan Study
From	David Crowley / Leah Russell	Project no.	CTLCEE
Date	24 November 2009	Re	Preliminary Vaughan Metropolitan Centre (VMC) 2031 Traffic Analysis

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1. INTRODUCTION

1.1. Study Background

The Vaughan Metropolitan Centre (VMC) is a planned downtown development with business offices, residences, entertainment and cultural facilities, and pedestrian shopping areas. At 1,500 acres, the VMC will be the largest and most ambitious development project in the City's history. The VMC core area will consist of a 125-acre site along the proposed Spadina Subway Extension just west of Jane St. and north of Highway 407. The VMC study area is bounded by Portage Rd. to the north, Creditstone Rd. to the east, Hwy 407 to the south, and west of Weston Rd. to the west.

The VMC is one of three focused areas (Vaughan Metropolitan Centre, Vaughan Centre and Woodbridge Core) being studied as part of the City of Vaughan New Official Plan process. Due to the development pressures in the VMC and the need to intensify land use to accommodate growth in a sustainable manner, it was necessary to perform a detailed analysis of land use and transportation prior to the completion of the New Official Plan.

This technical note documents the preliminary VMC transportation analysis prepared for the Vaughan Transportation Master Plan (TMP) Study, at the request of AECOM, to assess various roadway alternatives that would serve travel demand in 2031. For this analysis, the VMC and its vicinity were examined using the Vaughan Sub-Area Model (VSAM) developed specifically for the TMP Study.

This technical note describes the major input assumptions to the VSAM including population and employment projections, different road network alternatives, and then followed by analysis of the 2031 traffic forecasts generated by VSAM for the VMC area.

1.2. VSAM Overview

VSAM is a city-wide travel demand model developed by Halcrow for the evaluation of future transportation infrastructure requirements for the City of Vaughan in the long and short terms (2011, 2021, and 2031). It is a standard four-stage multi-modal travel demand model that estimates the overall trip-making decisions of individuals within the GTA/H during AM and PM peak periods, with substantial model refinement within the Vaughan sub-area and the focused areas in order to achieve a better modelling capability within the study areas. This model has been calibrated based on the 2006 Transportation Tomorrow Survey (TTS) and has been validated against 2006 base year traffic conditions and traffic counts at regional and local screenlines. Specific procedures for the VSAM calibration and validation as well as details regarding auto and transit network assumptions can be found in the technical report titled Vaughan Sub-Area Model Technical Report, November 2009.

2. POPULATION AND EMPLOYMENT PROJECTIONS

The population and employment data for the VMC traffic zones were updated to reflect intensification associated with the potential future build out of developments in the VMC. This preliminary dataset was developed in consultation with Urban Strategies Inc and City of Vaughan Staff. Figure 1 shows the VMC study area and its traffic zone system as defined in VSAM.

Figure 1 –VSAM Traffic Zone System within VMC

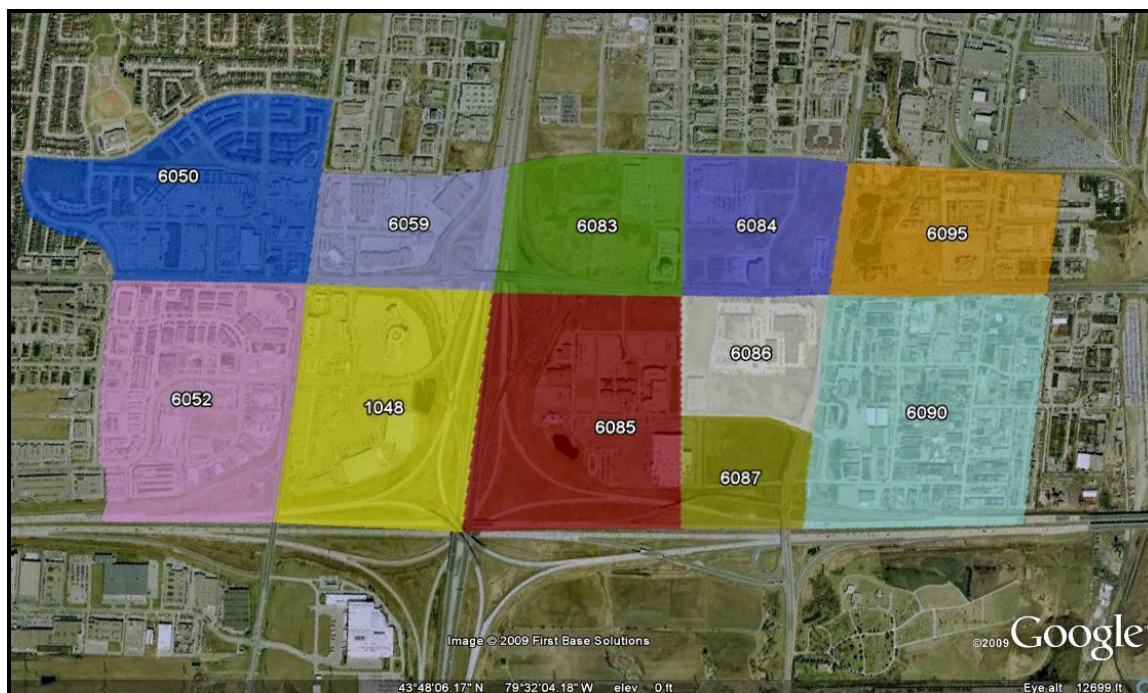


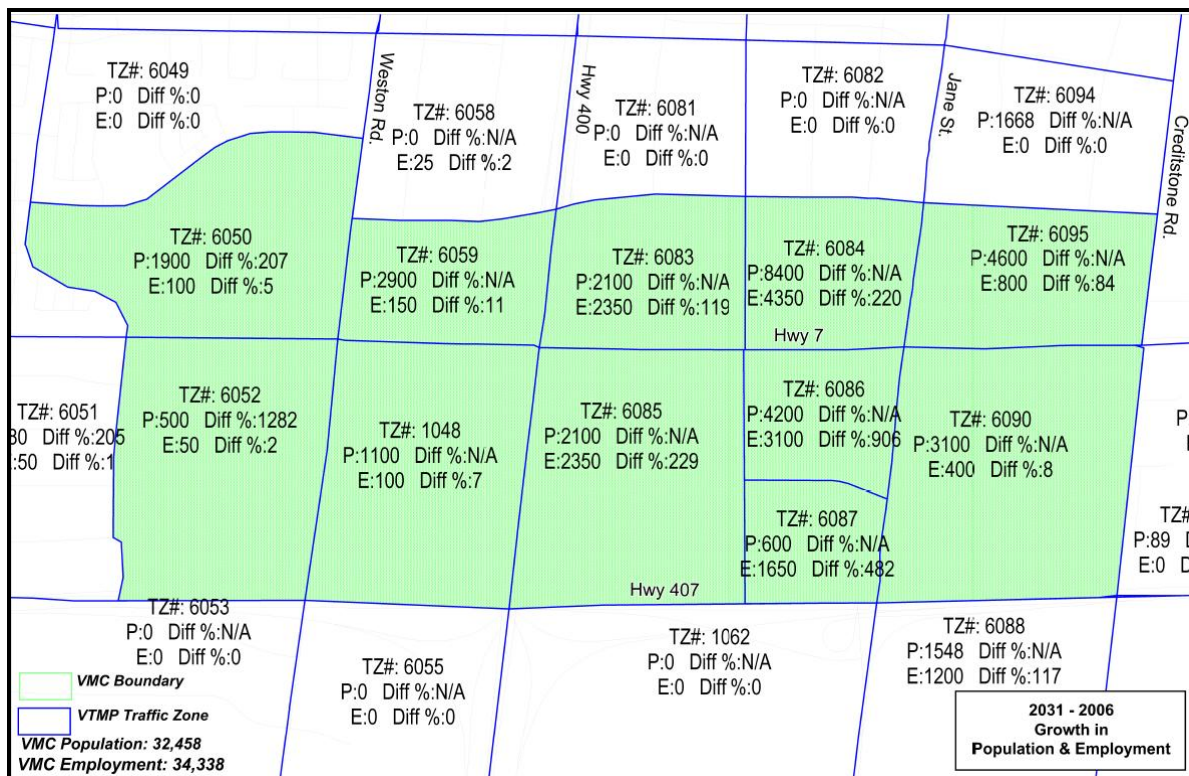
Table 1 and Figure 2 show that there will be a significant increase in population and employment in 2031 within the VMC area, which corresponds with the intensification plans of the City of Vaughan. It is estimated that 31,500 more residents and 15,400 more jobs will be allocated to the VMC area in 2031 with population growing at a much faster pace than employment. This set of population and employment

projections are the central assumptions for this preliminary VMC transportation analysis and are assumed to be the same for each individual road network alternative. It is important to note that these assumptions are preliminary and any changes to population and/or employment growth will require further analysis.

Table 1 – 2006 and 2031 VMC Population and Employment

Tz	Description	Population					Employment				
		2006	2031	Growth		CAGR	2006	2031	Growth		CAGR
				Abs	Diff %				Abs	Diff %	
6050	West Power Centre	919	2,819	1,900	207%	5%	1,922	2,022	100	5%	0%
6052	Woodbridge Square	39	539	500	1282%	11%	2,653	2,703	50	2%	0%
6059	Seven & 400 & Power Centre	-	2,900	2,900	-	-	1,418	1,568	150	11%	0%
1048	Colossus Centre	-	1,100	1,100	-	-	1,388	1,488	100	7%	0%
6083	NW Hwy 7 & Edgeley	-	2,100	2,100	-	-	1,973	4,323	2,350	119%	3%
6085	The Interchange	-	2,100	2,100	-	-	1,025	3,375	2,350	229%	5%
6084	NW Hwy 7 & Jane	-	8,400	8,400	-	-	1,973	6,323	4,350	220%	5%
6086	SW Hwy 7 & Jane	-	4,200	4,200	-	-	342	3,442	3,100	906%	10%
6087	NW Exchange Ave & Jane	-	600	600	-	-	342	1,992	1,650	482%	7%
6095	NE Hwy 7 & Jane	-	4,600	4,600	-	-	949	1,749	800	84%	2%
6090	SE Hwy 7 & Jane	-	3,100	3,100	-	-	4,954	5,354	400	8%	0%
Total		958	32,458	31,500	3288%	15%	18939	34,338	15,399	81%	2%

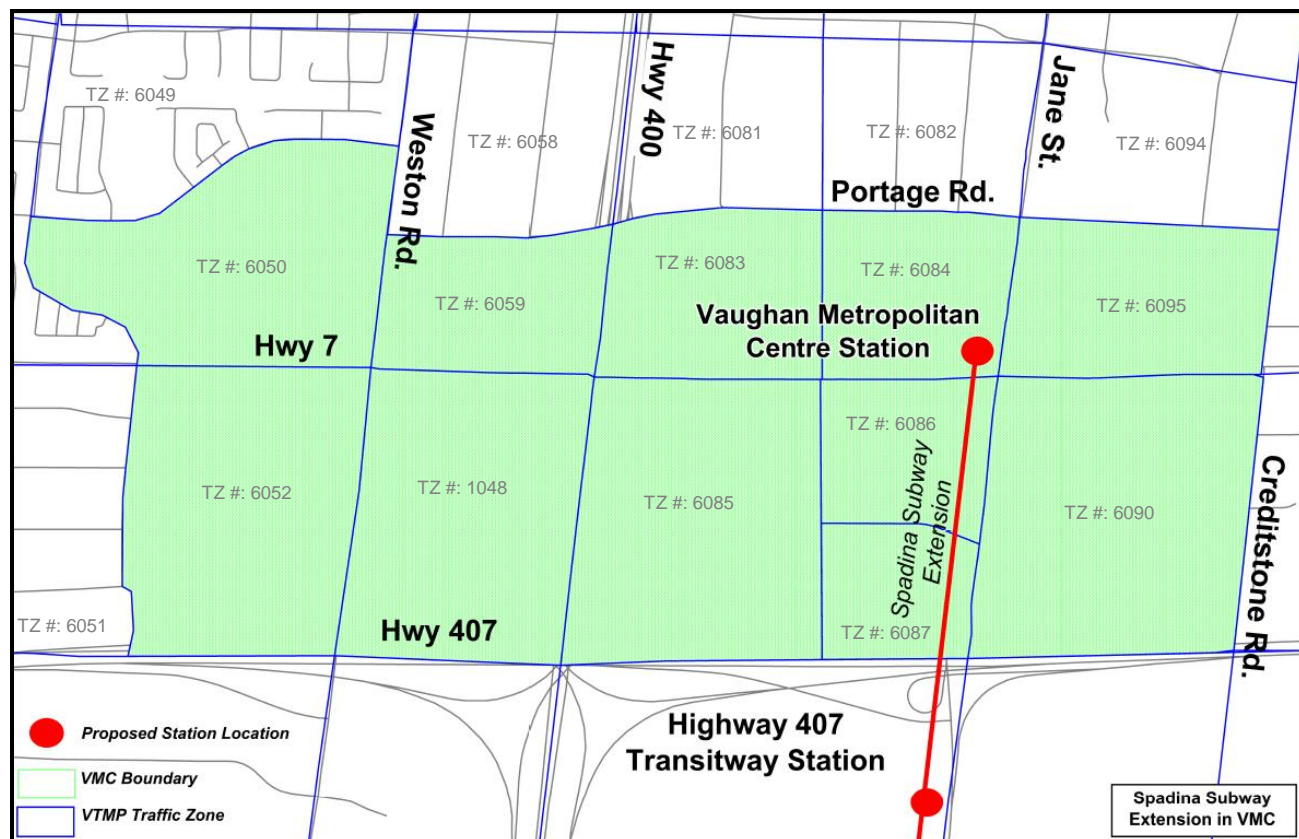
Figure 2 - Population and Employment Assumed Growth from 2006 to 2031 by Traffic Zone



The planned VMC intensification area is concentrated within convenient walking distances of the planned Vaughan Metropolitan Centre Subway Station located in the northwest quadrant of the Avenue 7 and Jane

St intersection, as shown in Figure 3. A high proportion of the population and employment growth proposed for the VMC is within traffic zones 6084 and 6086.

Figure 3 Proposed Spadina Subway Extension Station Locations in VMC Area



3. ROAD AND TRANSIT NETWORK ASSUMPTIONS

Three major 2031 alternative road network alternatives designed by AECOM are analyzed in this study:

- Base Alternative – “Ring Road”
- Alternative Network 1
- Alternative Network 2

3.1. Base Road Network

The base road network reflects earlier plans (2001) for the Vaughan Corporate Centre, and serves as the reference case for the analysis of the transportation implications of current land use proposals for the VMC. To accommodate future growth of travel demand within the VCC (now VMC), Avenue 7 (formerly Avenue 7) was to function as the VMC's "main street" bisecting a planned ring-road system, so as to create an efficient road network when coupled with improved VIVA transit services on Avenue 7 and the planned Spadina Subway Extension. The base alternative also has an improved northbound on-ramp to Highway 400 from Hwy 7 (see Figure 4). Figure 5 displays the number of lanes assumed for the base network scenario in VSAM.

Outside of the City of Vaughan, future road network improvements were coded based on assumptions provided by York Region and the City of Vaughan. A full list of regional and city-wide network improvements is provided in the Vaughan Sub-Area Model Technical Report, November 2009.

Figure 4– Base Network Alternative – “Ring Road”

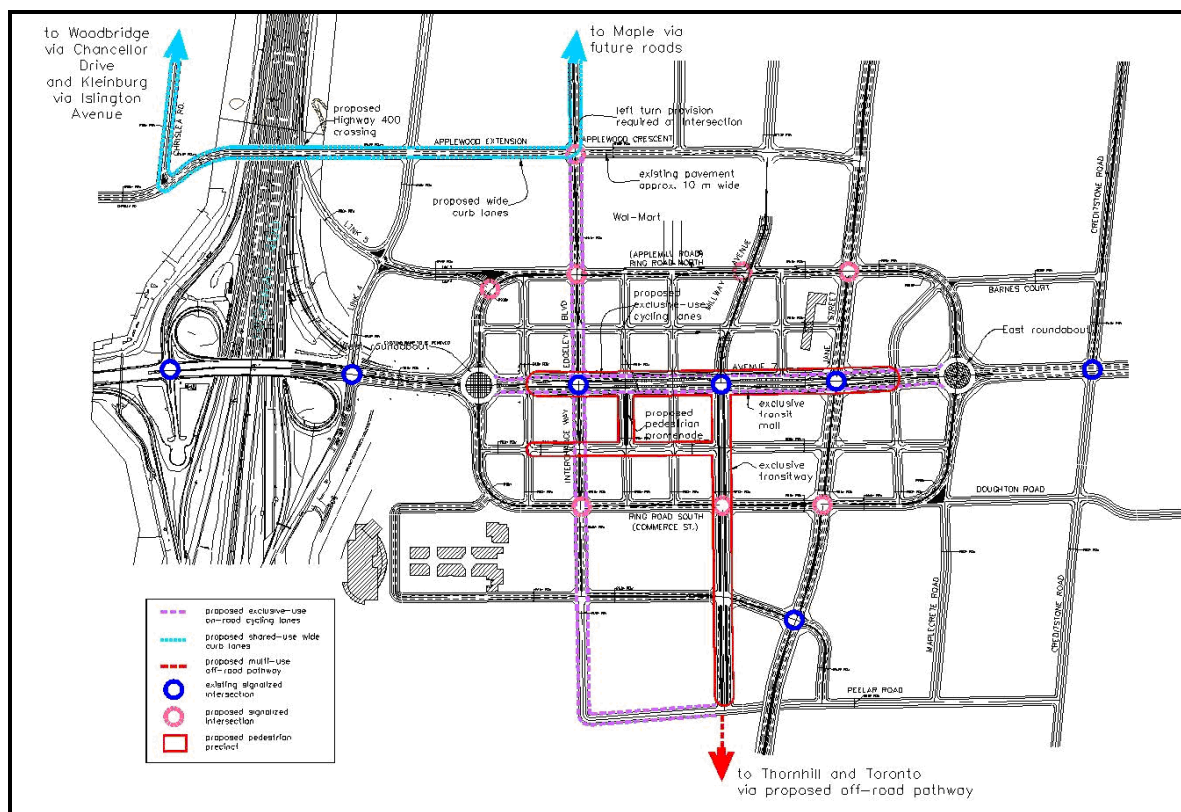
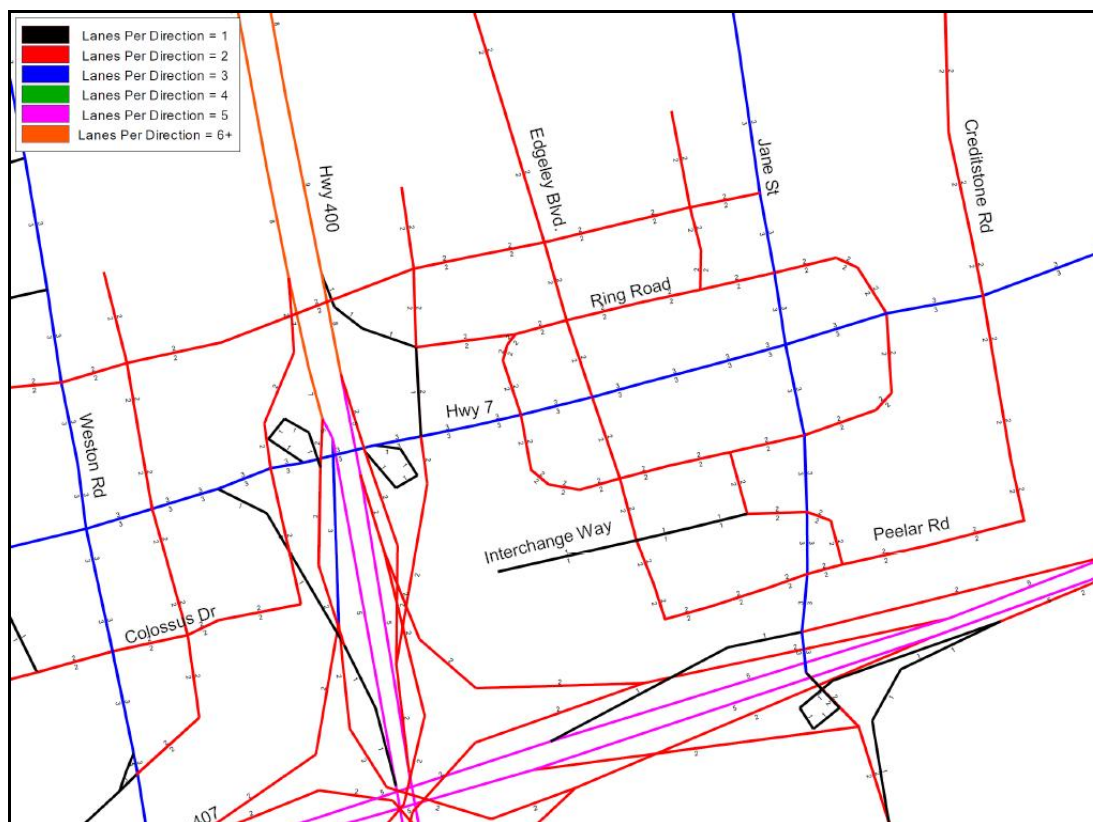


Figure 5 – Base Network Alternative Lane Assumptions



3.2. Road Network Alternatives 1 and 2

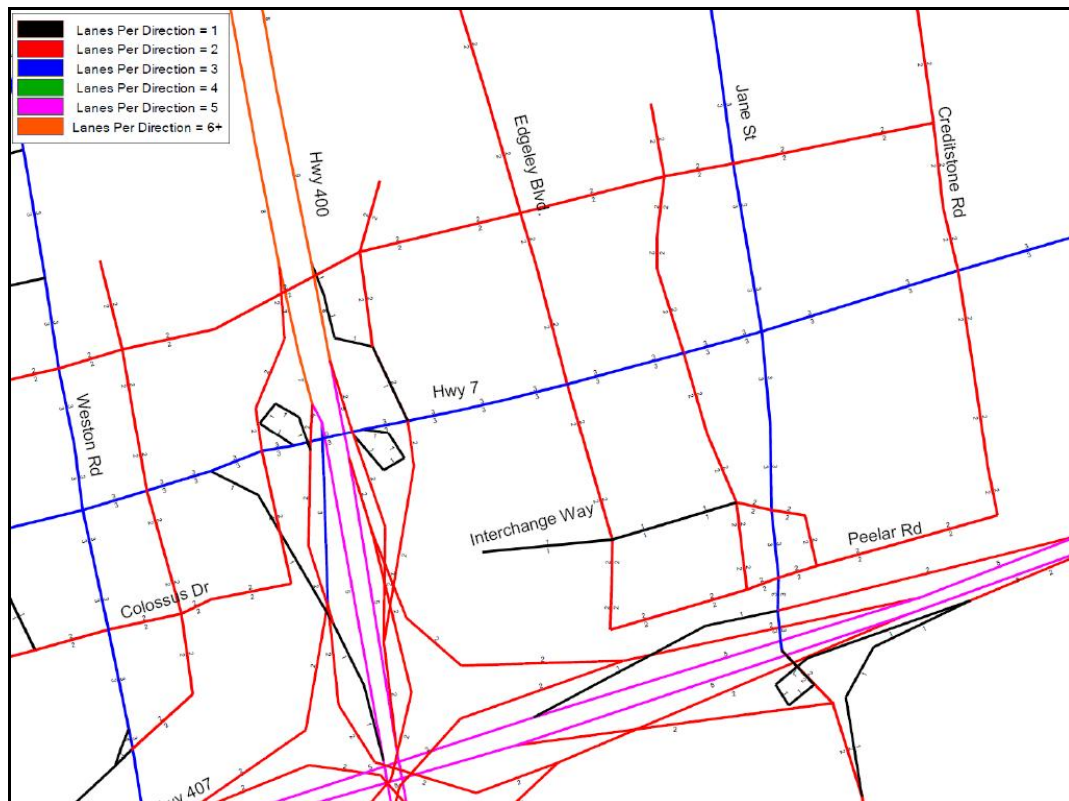
Network Alternatives 1 and 2 do not include the “ring-road” defined in the base case. Instead, these alternatives include a series of smaller collector roads diverting traffic to and from Avenue 7 to the areas surrounding the VMC core, with less residential concentration (see Figure 6). Both of these alternatives also have an improved northbound on-ramp to Hwy 400 from Hwy 7. Lane assumptions for these two alternatives are shown in Figure 7.

Alternatives 1 and 2 are similar to each other in the VMC area. The only difference between them is the improved interchange at Langstaff Road. Alternative 1 represents the interchange at Langstaff Rd and Hwy 400 as it exists today, while Alternative 2 involves improving the interchange to include a southbound off-ramp and a northbound on-ramp.

Figure 6 – VMC Road Network Alternatives 1 and 2



Figure 7 – VMC Road Network Alternatives 1 and 2 Lane Assumptions



3.3. Transit Network

Transit network assumptions were coded based on the latest York Region Transportation Master Plan, which includes significant improvements in service frequency for most of the bus routes that pass through the Vaughan area. Some key transit investments in Vaughan include Bolton GO Rail, TTC Spadina Subway Extension, TTC Yonge Subway Extension, 407 Transitway, improvements in transit service frequency for YRT VIVA line to 2-4 min, and Acceleride from Brampton to VMC. Among all these future transit investments, TTC Yonge Subway Extension is expected to create the biggest impact on transit usage within VMC as the end station will be located right in the VMC core on Avenue 7 west of Jane Street.

4. 2031 TRAFFIC FORECASTS

4.1. 2031 Trip Summary

The VSAM model results were used to evaluate the various network options within the VMC. Table 2 provides a summary of the origin trips (i.e. trips originating from VMC) in the AM peak period for each of the VMC traffic zones by auto driver, auto passenger, and transit patronage. Total transit mode share is expected to grow from 6% in 2006 to 37% in 2031. The VMC Core (Traffic Zones 6084 and 6086) will experience the highest growth in transit use, from 6% and 3% to 41% and 50%, respectively. This significant growth in transit ridership and mode share in the VMC between 2006 and 2031 reflects planned improvements in transit service including the TTC subway extension and improved YRT and VIVA transit services to the VMC.

Table 2 – 2006 and 2031 VMC Origin Trip Summary (AM Peak Period)

Tz	Description	2006 Origin Trips (Person)				2031 Origin Trips (Person)				06'-31' CAGR
		Auto Driver	Auto Pass	Transit	Transit Share (%)	Auto Driver	Auto Pass	Transit	Transit Share (%)	
6050	West Power Centre	361	73	49	10%	943	211	244	17%	4%
6052	Woodbridge Square	99	12	4	4%	282	53	52	13%	5%
6059	Seven & 400 & Power Centre	44	4	2	3%	583	169	631	46%	14%
1048	Colossus Centre	44	4	1	2%	274	69	213	38%	10%
6083	NW Hwy 7 & Edgeley	63	5	4	5%	832	201	547	35%	13%
6085	The Interchange	35	4	-	0%	334	71	229	36%	12%
6084	NW Hwy 7 & Jane	73	5	5	6%	1,652	437	1,449	41%	16%
6086	SW Hwy 7 & Jane	16	2	1	3%	876	267	1,134	50%	21%
6087	NW Exchange Ave & Jane	17	2	-	0%	416	86	33	6%	14%
6095	NE Hwy 7 & Jane	33	3	1	2%	572	159	546	43%	15%
6090	SE Hwy 7 & Jane	133	12	4	3%	482	97	199	26%	7%
Total		918	127	70	6%	7,247	1,819	5,277	37%	11%

Table 3 presents a summary of destination trips (i.e. trips destined to VMC) in 2006 and 2031. The transit mode share for trips destined to the VMC area (primarily to local jobs) is also expected to increase, from 7% in 2006 to 13% in 2031.

Table 3 – 2006 and 2031 VMC Destination Trip Summary (AM Peak Period)

Tz	Description	2006 Destination Trips (Person)				2031 Destination Trips (Person)				06'-31' CAGR
		Auto Driver	Auto Pass	Transit	Transit Share (%)	Auto Driver	Auto Pass	Transit	Transit Share (%)	
6050	West Power Centre	1,082	1,001	144	6%	1,254	1,608	296	9%	1%
6052	Woodbridge Square	1,368	234	78	5%	1,399	270	110	6%	0%
6059	Seven & 400 & Power Centre	718	99	67	8%	890	116	133	12%	1%
1048	Colossus Centre	688	77	55	7%	744	81	123	13%	1%
6083	NW Hwy 7 & Edgeley	964	120	85	7%	1,913	233	435	17%	3%
6085	The Interchange	563	60	2	0%	2,285	260	496	16%	7%
6084	NW Hwy 7 & Jane	942	117	110	9%	2,404	283	545	17%	4%
6086	SW Hwy 7 & Jane	188	19	12	6%	1,064	112	196	14%	8%
6087	NW Exchange Ave & Jane	199	21	0	0%	960	108	11	1%	7%
6095	NE Hwy 7 & Jane	494	62	44	7%	714	82	105	12%	2%
6090	SE Hwy 7 & Jane	2,367	292	263	9%	2,448	300	474	15%	0%
Total		9,573	2,102	860	7%	16,075	3,453	2,925	13%	2%

Table 4 summarizes the auto driver trips for the AM and PM peak hours. It is observed that the estimated annual growth rates for the PM peak hour auto driver origin trips are slower than the growth rates for the AM peak period. This is mostly due to the slower growth rates for the shopping trips, which are closely related to employment and retail jobs growth rates rather than higher population growth rates.

Table 4 – 2006 and 2031 Trip Summary (AM and PM Peak Hour)

Tz	Description	Auto Driver Origin Trips (Vehicle)						Auto Driver Desintation Trips (Vehicle)					
		AM		06'-31' CAGR	PM		06'-31' CAGR	AM		06'-31' CAGR	PM		06'-31' CAGR
		2006	2031		2006	2031		2006	2031		2006	2031	
6050	West Power Centre	139	393	4%	787	919	1%	356	435	1%	688	935	1%
6052	Woodbridge Square	41	119	4%	654	693	0%	524	537	0%	298	368	1%
6059	Seven & 400 & Power Centre	18	254	11%	731	883	1%	259	336	1%	534	784	2%
1048	Colossus Centre	17	117	8%	864	962	0%	263	288	0%	772	924	1%
6083	NW Hwy 7 & Edgeley	28	365	11%	518	1,214	3%	315	732	3%	454	1,237	4%
6085	The Interchange	17	150	9%	658	3,144	6%	185	937	7%	578	3,001	7%
6084	NW Hwy 7 & Jane	32	723	13%	804	1,934	4%	300	945	5%	669	2,034	5%
6086	SW Hwy 7 & Jane	8	385	17%	317	1,363	6%	58	444	8%	228	1,381	7%
6087	NW Exchange Ave & Jane	8	183	13%	61	323	7%	64	397	8%	20	171	9%
6095	NE Hwy 7 & Jane	15	251	12%	199	350	2%	168	266	2%	16	245	11%
6090	SE Hwy 7 & Jane	50	202	6%	1,041	1,220	1%	753	790	0%	372	557	2%
Total		374	3,142	9%	6,635	13,004	3%	3,245	6,107	3%	4,630	11,636	4%

4.2. 2031 Screenline Results and V/C Ratios

Error! Reference source not found. Table 5 and Table 6 present the traffic volume forecasts for the three network alternatives on each of the local screenlines identified in Figure 8. It should be noted that VSAM does not model light and heavy trucks; therefore an additional 7% of trucks are added to each road link to account for background truck volumes based on observed truck usage within the study area. In the AM analysis, a passenger car equivalency (PCE) factor of 1.5 is applied for trucks, except on routes where large trucks would frequently travel, in which case a PCE of 2.0 is used as well as a higher percentage of trucks. No trucks are allowed to use Avenue 7 between Jane St. and Weston Rd. and were manually assigned to alternative bypass routes.

Figure 8 – VMC Screenline Locations

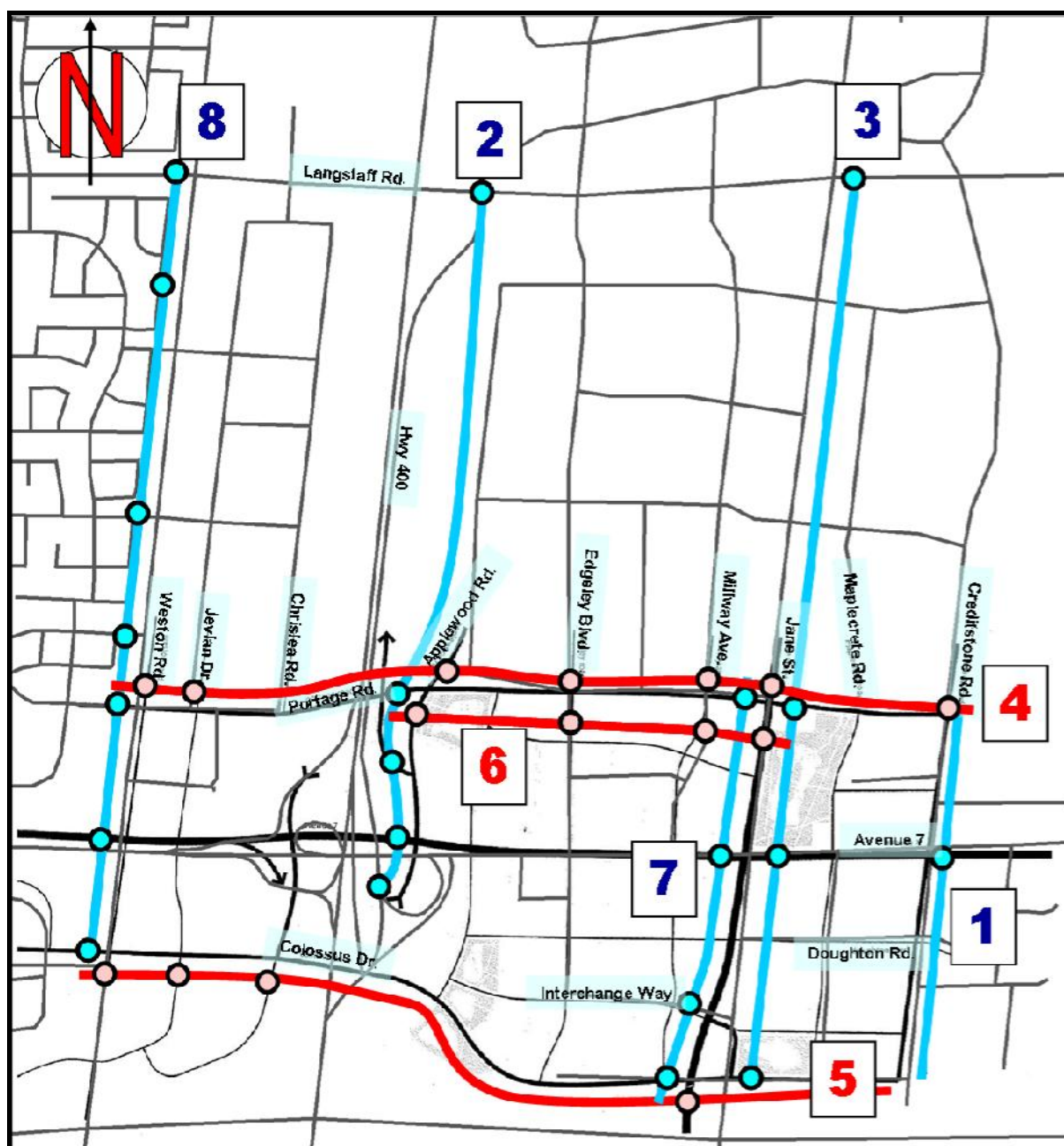


Table 5 – 2006 and 2031 Screenline Summary (AM Peak Hour)

Scn	Dir	Location	HCI 2006 - Sc1091 AM PEAK				HCI 2031 - Sc20013 (Base in VMC) AM Peak				HCI 2031 - Sc20014 (Alternative 1 in VMC) AM Peak				HCI 2031 - Sc20015 (Alternative 2 in VMC) AM Peak			
			Pk Hr Total Veh	Pk Hr Transit Pass	Pk Hr Transit Share	V/C Ratio	Pk Hr Total Veh	Pk Hr Transit Pass	Pk Hr Transit Share	V/C Ratio	Pk Hr Total Veh	Pk Hr Transit Pass	Pk Hr Transit Share	V/C Ratio	Pk Hr Total Veh	Pk Hr Transit Pass	Pk Hr Transit Share	V/C Ratio
1	E	East of Creditstone	2,120	110	5%	0.71	2,700	560	16%	0.90	2,620	550	16%	0.87	2,620	550	16%	0.87
1	W	East of Creditstone	2,180	150	6%	0.73	2,680	480	14%	0.89	2,680	470	14%	0.89	2,670	470	14%	0.89
2	E	East of Hwy 400	4,730	180	3%	1.03	5,520	1,340	18%	0.95	5,890	1,320	17%	1.02	5,960	1,320	17%	1.03
2	W	East of Hwy 400	3,130	80	2%	0.42	5,960	450	6%	0.60	6,130	430	6%	0.61	6,150	430	6%	0.61
3	E	East of Jane	2,140	210	8%	0.49	3,510	730	16%	0.41	2,690	720	20%	0.40	2,680	720	20%	0.39
3	W	East of Jane	2,000	150	6%	0.45	3,480	430	10%	0.40	3,220	420	11%	0.47	3,150	420	11%	0.46
4	N	North of Portage	1,790	420	18%	0.33	2,500	1,080	28%	0.23	2,510	1,080	28%	0.23	2,550	1,080	28%	0.24
4	S	North of Portage	2,940	430	12%	0.54	5,320	2,180	27%	0.49	5,330	2,190	27%	0.49	5,370	2,190	27%	0.50
5	N	South of Collossus	2,040	570	20%	0.45	2,640	1,060	27%	0.44	2,560	1,070	27%	0.43	2,590	1,070	27%	0.43
5	S	South of Collossus	2,630	290	9%	0.73	5,130	1,000	15%	0.85	5,150	1,010	15%	0.86	5,200	1,010	15%	0.87
6	N	South of Portage	1,140	320	20%	0.38	1,760	720	27%	0.29	1,560	730	30%	0.26	1,570	730	30%	0.26
6	S	South of Portage	1,080	130	10%	0.36	3,480	1,270	25%	0.58	3,250	1,260	26%	0.54	3,210	1,260	26%	0.54
7	E	West of Jane	2,420	220	8%	0.71	3,880	2,160	34%	0.38	3,480	2,120	36%	0.53	3,480	2,120	36%	0.53
7	W	West of Jane	2,090	200	8%	0.61	4,320	1,460	23%	0.42	3,880	1,360	24%	0.59	3,860	1,360	24%	0.58
8	E	West of Weston	5,110	230	4%	0.73	5,900	510	7%	0.67	5,870	490	7%	0.67	5,840	490	7%	0.66
8	W	West of Weston	2,260	130	5%	0.32	3,650	230	5%	0.41	3,620	220	5%	0.41	3,580	220	5%	0.41

Assume auto occupancy is 1.10 approximately

Assume Transit Peak Hour Factor is 0.60 approximately

Table 6 – 2006 and 2031 Screenline Summary (PM Peak Hour)

Scn	Dir	Location	HCI 2006 - Sc5104 PM Peak		HCI 2031 - Sc25013 (Base in VMC) PM Peak		HCI 2031 - Sc25014 (Alternative 1 in VMC) PM Peak		HCI 2031 - Sc25015 (Alternative 2 in VMC) PM Peak	
			Pk Hr Total Veh	V/C Ratio	Pk Hr Total Veh	V/C Ratio	Pk Hr Total Veh	V/C Ratio	Pk Hr Total Veh	V/C Ratio
1	E	East of Creditstone	2,590	0.86	3,360	1.12	3,330	1.11	3,340	1.11
1	W	East of Creditstone	1,940	0.65	2,780	0.93	2,700	0.90	2,700	0.90
2	E	East of Hwy 400	3,620	0.79	6,530	1.13	7,080	1.22	7,280	1.25
2	W	East of Hwy 400	5,320	0.72	10,570	1.06	10,960	1.10	11,010	1.10
3	E	East of Jane	2,590	0.59	4,480	0.52	3,860	0.57	3,860	0.57
3	W	East of Jane	2,000	0.45	4,210	0.49	2,990	0.44	2,980	0.44
4	N	North of Portage	2,650	0.49	4,840	0.45	5,160	0.48	5,270	0.49
4	S	North of Portage	2,200	0.41	3,820	0.35	3,890	0.36	3,980	0.37
5	N	South of Colossus	3,440	0.76	6,160	1.03	6,190	1.03	6,140	1.02
5	S	South of Colossus	3,400	0.94	5,660	0.94	5,710	0.95	5,640	0.94
6	N	South of Portage	860	0.29	3,500	0.58	3,400	0.57	3,490	0.58
6	S	South of Portage	1,450	0.48	4,060	0.68	3,890	0.65	3,970	0.66
7	E	West of Jane	3,050	0.90	6,670	0.65	5,760	0.87	5,760	0.87
7	W	West of Jane	3,070	0.90	5,900	0.58	4,700	0.71	4,630	0.70
8	E	West of Weston	4,280	0.61	6,530	0.74	6,530	0.74	6,570	0.75
8	W	West of Weston	4,760	0.68	6,580	0.75	6,570	0.75	6,620	0.75

Assume auto occupancy is 1.10 approximately

Assume Transit Peak Hour Factor is 0.60 approximately

2006 versus 2031 Base

The most obvious difference between 2006 and the 2031 Base option is the significant growth in peak hour total vehicles for both AM and PM. For the AM peak hour, the greatest traffic growth occurs in the westbound and southbound directions; particularly south of Portage Rd and West of Jane St. This result reflects the substantial increases in population and resident labour force assumed within the VMC area, which is expected to generate increased commuting from this area.

The PM peak hour has most growth occurring in the northbound direction (which reflects residents returning to the VMC area). The PM peak hour, which includes return to home trips for VMC residents and employees as well as shopping and non-home bases travel, is more complex. The PM peak hour flows are more balanced with forecasted traffic growth being greater in the westbound direction versus the AM peak reverse direction (eastbound).

The local congestion in the VMC area increases between 2006 and 2031. This overall congestion can be attributed to the assumed land use changes in the VMC area. As can be seen in Figure 9, in year 2006 (on top) congestion was concentrated on Avenue 7 from Weston Rd to Jane St in the PM peak hour; while by 2031 (on bottom), Portage Rd, Weston Rd, Avenue 7, the Ring Road, and even parts of Highway 407 are forecasted to be operating at or above capacity in the VMC area in the PM peak hour. Within the intensified VMC core area, centred on Avenue 7 and west of Jane Street, there appears to be sufficient road capacity during the PM peak hour to accommodate auto traffic generated within the core area.

Alternative 1 versus Alternative 2

On a screenline level, Table 5 and Table 6 show that the improvement to the Langstaff Rd/Highway 400 interchange has little impact on the VMC area. The V/C ratios across the screenlines differ by less than 1% for both AM and PM peak hours.

The analysis shows that Alternative 1 and Alternative 2 have very little difference in terms of local congestion. As can be seen in Figure 10 for both AM (on TOP) and PM (on BOTTOM) peak hours, the V/C ratios in the VMC area for Alternative 1 and Alternative 2 differ by less than 5% with the most significant variances occurring at the Highway 400/Avenue 7 interchange. While the Langstaff Rd/Highway 400 interchange improvements may have stronger impacts elsewhere, the impacts to the VMC area are minimal.

Base Option versus Alternatives 1 and 2

The analysis of the Base option versus the alternative options shows that the overall total number of vehicles across the screenlines in the VMC core area is reduced for Alts 1 and 2. The fact that the V/C ratios, for both AM and PM peak hours, across the screenlines in the VMC core area are generally slightly worse in the alternatives than in the Base option indicates that the Base option offers more capacity than the alternative options provide. This is specifically east and west of Jane St due to the additional capacity provided by the Ring Road feature. Figure 11 suggests that the local congestion in the PM peak hour in the VMC area for both the Base option (on TOP) and Alternative 1 (on BOTTOM) is significant on Portage Rd, Weston Rd, and Avenue 7 across Highway 400 and outside of the VMC area. The same can be said for the Base option versus Alternative 2.

Figure 10 Alt #1 versus Alt #2 V/C Ratio % Difference (AM on TOP / PM on BOTTOM)

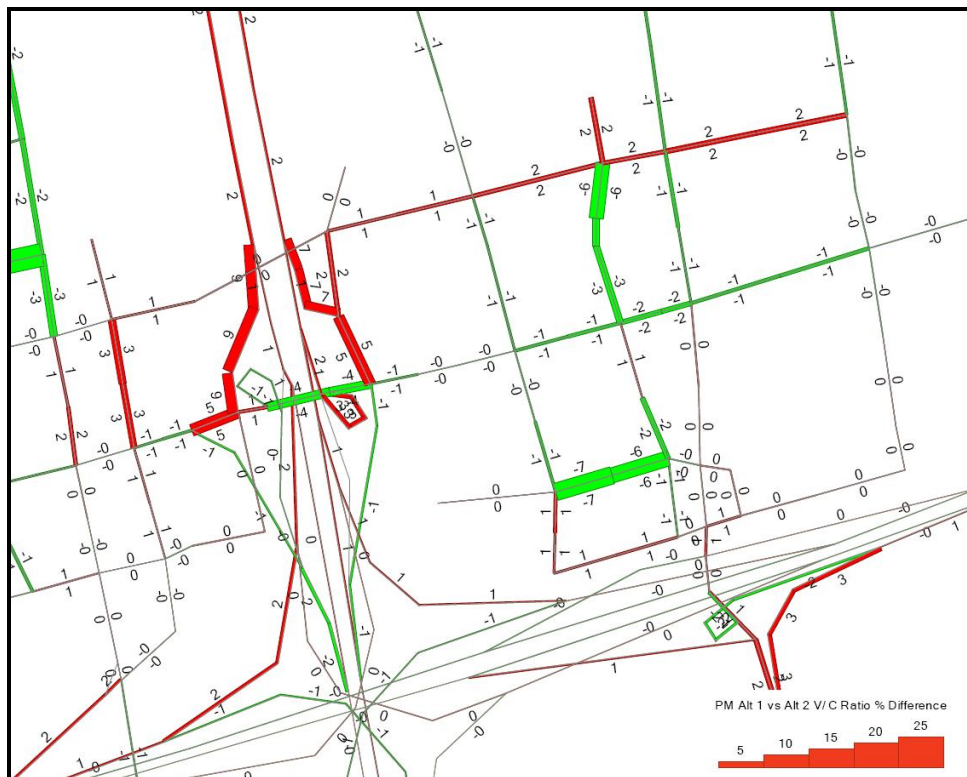
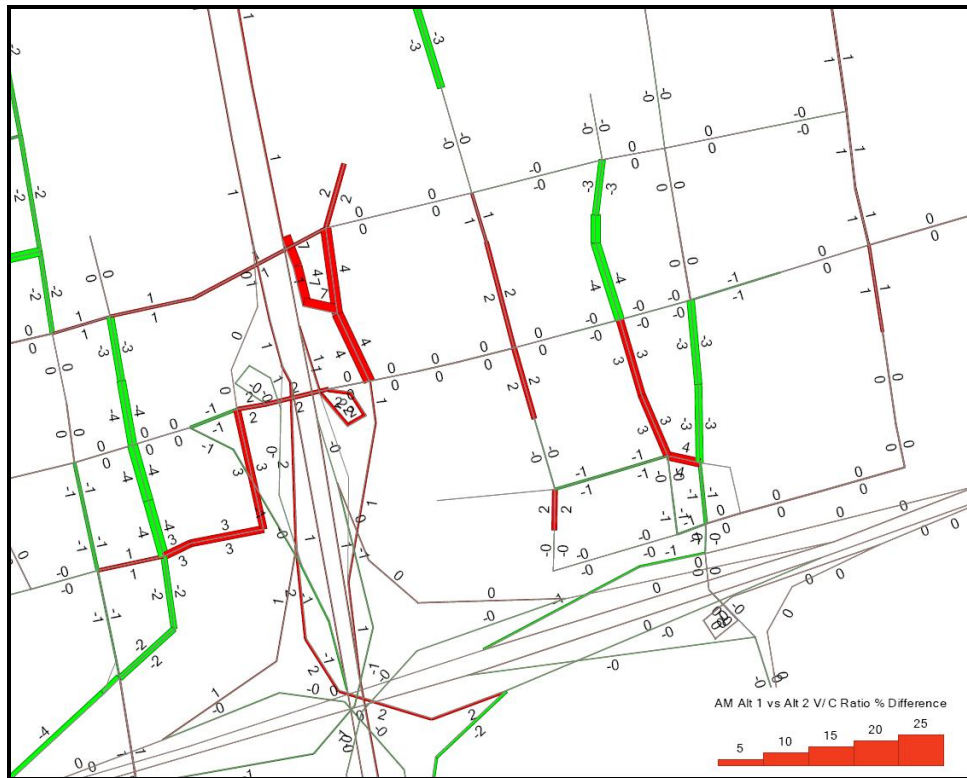
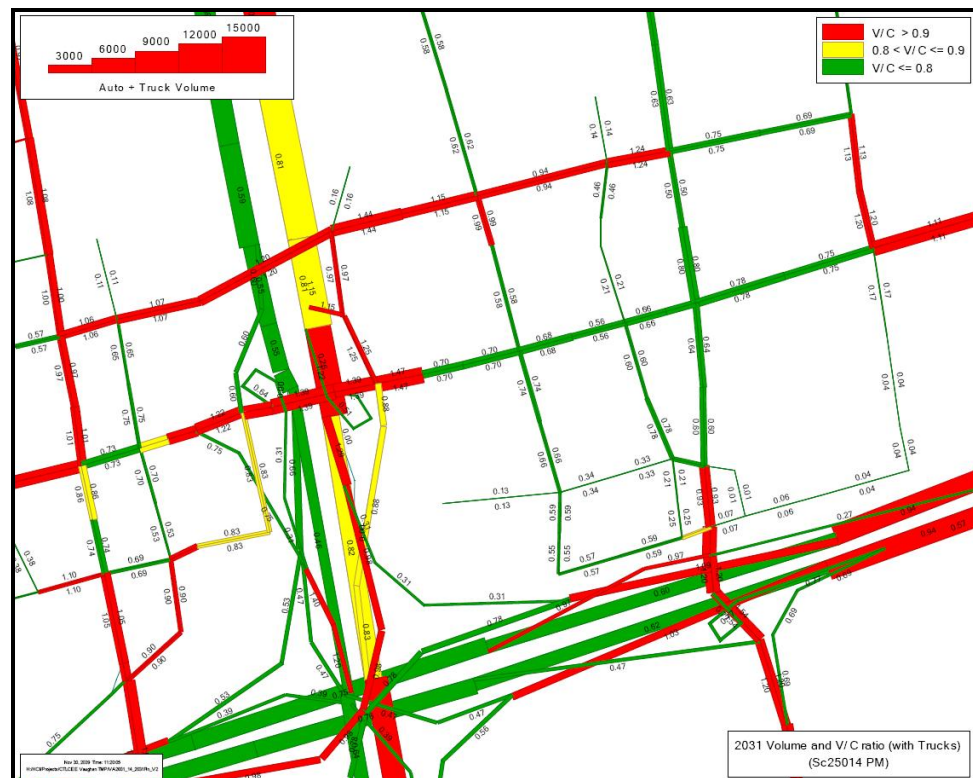
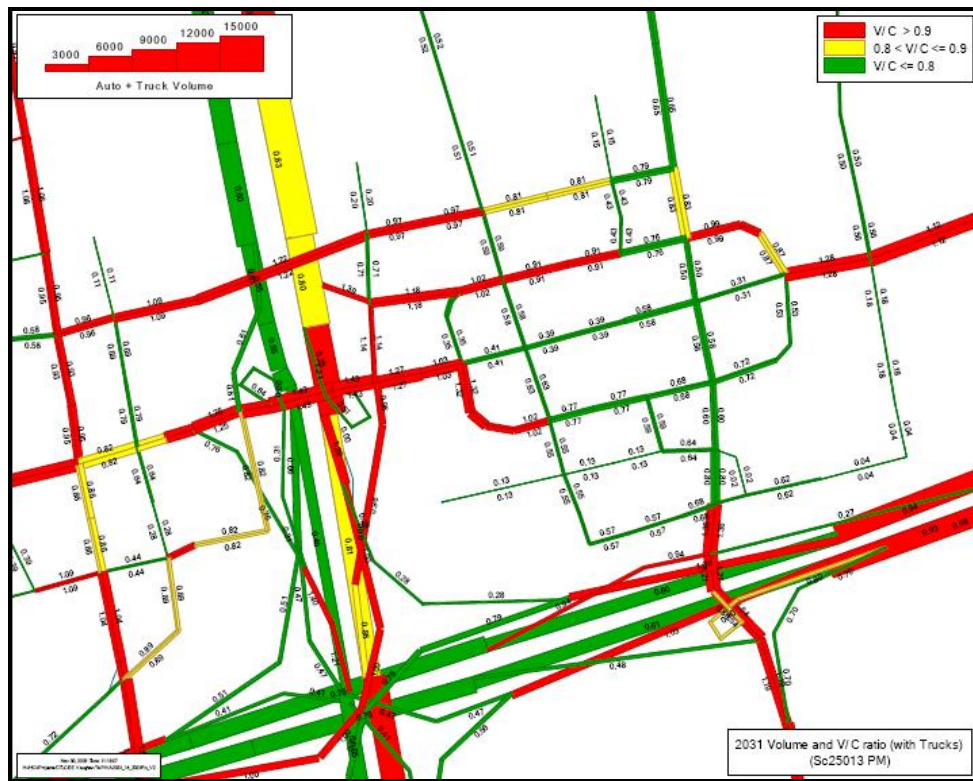


Figure 11 PM Peak Hour V/C Ratios for Base (on TOP) and Alt 1 (on BOTTOM) Options



4.3. Bridge Options in Network Alternative 2

Three additional options are tested (AM only) to analyze the traffic impacts that may result from the bridges across Hwy 400 at Langstaff Rd. and Colossus Rd. These options are:

- Langstaff Rd Bridge ONLY
- Colossus Rd Bridge ONLY
- BOTH Langstaff Rd Bridge and Colossus Rd Bridge

Each option was developed and tested using the Alternative 2 road network (with the Langstaff Interchange improvements), as the reference case. A PCE of 2.0 is assumed for trucks.

The figures provided in the Appendix illustrate the total (auto and truck) volumes, along with the V/C ratios, obtained for each network alternative for both AM and PM peak hours. The addition of the Langstaff Rd Bridge to the Alternative 2 network does not have significant impacts on traffic conditions in the VMC area.

The “Colossus Rd Bridge ONLY” option diverts traffic from Avenue 7 and Portage Road in the VMC area. During the AM peak, this reduced V/C ratios on Avenue 7 east of Highway 400 from 1.08 to 0.97. In the PM peak hour, however, the demands on bridge are forecasted to exceed capacity (V/C 1.17) and V/C ratios on Avenue 7 east of Highway 400 are reduced from 1.48 to 1.30, still substantially above capacity.

The “BOTH Langstaff Rd Bridge and Colossus Rd Bridge Option” is comparable to the “Colossus Rd Bridge ONLY” option. This reflects the marginal impacts of the Langstaff Rd Bridge on traffic within the VMC area.

5. SUMMARY/CONCLUSIONS

As part of the transportation analysis for the Vaughan TMP Study, various network options for the VMC sub-area were evaluated based on the VSAM model results. Population and employment projections that reflect the latest growth and intensification proposals for the VMC were compiled, three major road network concepts were tested using the VSAM, and 2031 traffic forecasts were generated for further analysis by the project team. VSAM estimates that transit usage and mode share will increase significantly by 2031, which would help to transform VMC into a transit-oriented community in the future. The largest increases in transit use are expected for the new residents of the VMC Core area with AM peak hour transit use increasing from 6% to 37% between 2006 and 2031. Substantial increases are also forecasted for transit trips destined for jobs in the VMC (from 7% to 13%).

Based on the current population and employment assumptions for 2031, severe congestion is expected in the vicinity of Highway 400, at the western end of the VMC and at the eastern end in the Avenue 7

corridor. Portage Rd (from Weston Rd to Jane St), Weston Rd, Jane St (south of VMC), and Avenue 7 (west of Weston Rd and east of Creditstone Rd) are operating with V/C ratios over 0.9. Nevertheless, by 2031, there is still sufficient capacity on the auto network in both the AM and PM peak hours in the VMC "urban core area" near Jane and Avenue 7. Given the proposed Spadina Subway Extension to the VMC "core area," significant population and employment growth can be expected to occur in the vicinity of the "core area." The employment growth assumed for 2031 appears to be high, in that the PM outbound traffic on critical links that service the wider VMC is substantially over capacity. In this context, the growth estimates outside of the core area (within VMC) appear to be too high, and land use alternatives with reduced employment should be considered to bring PM peak demand levels into line with total capacity

In the Base option, the modelled northbound on-ramp from Avenue 7 to Highway 400 has been deemed geographically unfeasible by the MTO. Based on the combination of V/C ratio and screenline analyses, Halcrow recommends that Alternative 1 be analyzed further as a viable alternative to accommodate the population and employment forecasts provided in this technical report for the entire VMC area.

It should be noted that these model results and findings represent the overall network performance for each network alternative. Local network adjustments might result in a more efficient road network for these VMC network concepts. Moreover, VSAM is calibrated based on the observed 2006 base year travel behaviour. Further analysis of the future trip rates within VMC is recommended to ensure that the VSAM generates reasonable traffic forecasts that are sensitive to the substantial land use changes in 2031. This can be done through a benchmarking exercise that compares the future trip statistics in VMC with some other transit-oriented areas like North York City Centre.

Appendix A

