WSP

TECHNICAL NOTE

DATE:	24 January 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A49 VISSIM Model Review		
PROJECT:	Peel Hall	**AUTHOR:**	MJ
CHECKED:	TL	**APPROVED:**	CEW

INTRODUCTION

WSP have been commissioned by Warrington Borough Council to provide technical advice regarding transport modelling for a development site at Peel Hall. As part of the development assessment a 2019 base Vissim microsimulation model of the A49 Corridor between A49 Winwick Link Road/Newton Road/ Winwick Park Avenue Junction and A49/ Retail Park Junction plus the M62 mainline at junction 9 has been constructed. A high level model review has been undertaken to assess the model validity and fitness for purpose. The findings are detailed in this Technical Note.

MODEL REVIEW

1. Network Layout Coding

   Network layout (numbers of lanes, lane widths, merge etc) have been checked against Google Map and Google Streetview and no major issues have been found.

2. Driving Behaviour Parameters

   We notice some roads are coded inconsistently, for example at M62 J9, the EB onslip and WB offslip are coded with a link behaviour type of 203:Slip Roads while WB onslip and EB offslip are coded as 4. Mway 2. It should be confirmed if these parameters are based on the previous validated VISSIM model developed by AECOM.

3. Signals

   Signals on M62 J9 should have two controllers from signal timing sheet while they have been coded in one controller in the model.

4. Speed Distributions and Speed Decisions

   Sandy Lane W free flow left turn has a desired speed distribution of 30 mph whereas the posted speed limit is 20 mph.

5. Traffic Demand

   Three vehicle classes: car, LGV and HGV have been defined in the model. In the AM peak, it seems the car demand has been doubled on one link, as shown in the screen shot below. Please check if this is an error.

Count: 74	No	Name	Link	VehComp(600)	Volume(0)	Volume(600)	Volume(1200)	Volume(1800)	Volume(2400)	Volume(3000)	V
49	171	Parking Lot 1072	203	2: Car	160.1	168.0	175.9	212.0	236.0	259.9	
50	312	Parking Lot 1072	203	3: LGV	40.0	44.0	48.0	60.0	66.0	72.0	
51	41	Parking Lot 1087	205	1: HGV	32.0	34.0	24.2	40.2	56.0	60.0	
52	182	Parking Lot 1087	205	2: Car	517.0	575.0	540.0	620.0	712.0	745.0	
53	323	Parking Lot 1087	205	3: LGV	41.2	42.4	46.6	56.9	67.2	76.9	
54	221	Parking Lot 1075	214	2: Car	0.0	0.0	0.0	0.0	0.0	0.0	
55	154	Parking Lot 1227	227	1: HGV	4.2	1.3	4.2	8.9	8.1	2.7	
56	235	Parking Lot 1150	227	2: Car	129.6	100.6	130.8	119.2	146.5	152.3	
57	295	Parking Lot 1227	227	2: Car	129.6	100.6	130.8	119.2	146.5	152.3	
58	445	Parking Lot 1227	227	3: LGV	0.0	0.0	0.0	0.0	22.0	0.0	
59	451		265	2: Car	70.0	70.0	70.0	70.0	70.0	70.0	
60	37	Parking Lot 1083	274	1: HGV	424.0	410.0	396.0	436.0	452.0	468.0	

6. Simulation Parameters

All simulation parameters in the model are acceptable. The LMVR states the model outputs are the average over ten random seeds but it is not clear what seeds have been used. From the model setting it is assumed the random seeds used in the model are: 5, 10, 15…45, 50. Please can this be confirmed.

7. Public Transport

Bus routes and their departure times have been defined in the model. The bus timetables have not been checked against published schedules but it was noted that the departure times in AM and PM are the same.

8. Observation of Model Simulation Runs

We have checked the vehicle behaviours such as lane changing, overlapping etc and no major issues have been observed.

We have also undertaken a high-level sense check against Google typical traffic conditions.

In summary:

a. Google Traffic shows long delays on M62 eastbound mainline and the eastbound off-slip road in the AM peak, as shown below. However, the model does not really replicate the queues. We are aware that there are currently roadworks on the M62 in this area for the implementation of smart motorways and therefore the local authority may be able to comment further on if this level of congestion is typical or just a product of temporary traffic management.
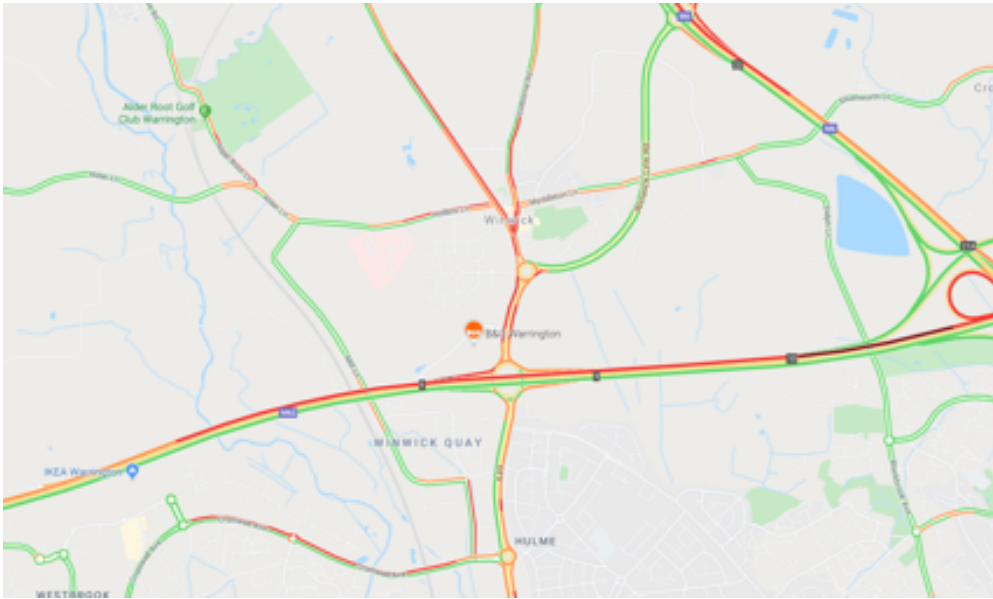
b. In both AM and PM, A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West Junction and A49 Winwick Road/ Nine Retail Park Junction are quite congested all through the peak times. The modelled queues are much shorter on Sandy Lane westbound and the A50 Long Lane westbound. These two roads along with M62 J9 are the main exits for vehicles generated by the proposed new development that this model will support so it is recommended to review the level of queuing and delay on these links in comparison to observed conditions because no journey time or queue comparison is currently included outside of the A49 corridor.
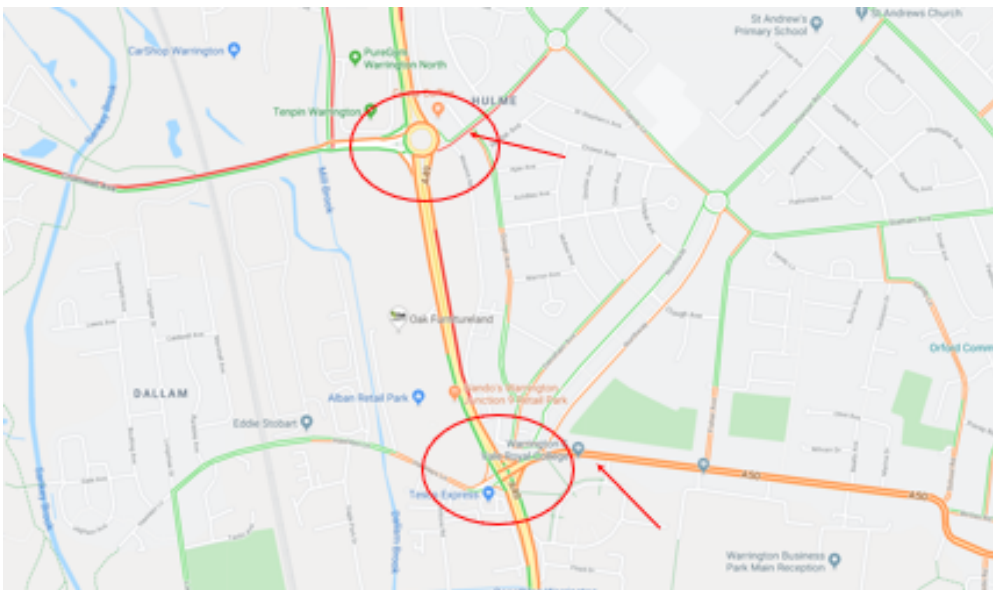
c. Significant queues have been observed on Northway in the AM model, which might be due to the potential double counting of demand we observed in Paragraph 5. If the demand is correct, we also recommend this link to be extended to show the real queue length and prevent latent demand.

9. Model Outputs

Both AM and PM models have been run using 10 seeds and the average outputs have been compared with the modelled results (turning flows, journey times and link flows) reported in the LMVR. There are some very minor differences, which could be due to Vissim version, but in general the results can be replicated.

10. Error Message

One error message is produced, again this might be due to the potential demand error identified in paragraph 5.

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Warning        Vehicle input 235: Parking Lot 1150 could not be finished completely (remain: 106 vehicles).
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SUMMARY

In summary this model has met the microsimulation modelling guidelines. Our main concerns are:

- A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West Junction, A49 Winwick Road/ A50 Junction, along with M62 J9 are the main exits for the vehicles generated by the proposed new developments. Compared with Google Traffic, the queues might be under estimated in the base model.

- Car demand on Northway (Link #227) seems to be doubled.