Subject:	RE: Peel Hall Updated VISSIM Base Model (v6)
Date:	Monday, 2 November 2020 at 14:47:57 Greenwich Mean Time
From:	Taylor, Mike
To:	fiona.bennett@highgatetransportation.co.uk
CC:	dave.tighe@highgatetransportation.co.uk, 'Colin Griffiths', 'Wright, Colin', 'Heywood, Robert', Dickin, Alan
Attachments:	image001.png, image002.png, TN11 A49 Corridor Base VISSIM Model Review Oct2020 final v2.pdf

Fiona,

Apologies for the slight delay. Please find attached WSP's review of the October 2020 version of the VISSIM model.

The conclusion is that in general terms the updated base model reverts to a level of performance commensurate with an earlier July 2020 version that was deemed acceptable, but that it may overstate capacity on the A49 / A574 exit – through non-adherence to circulatory carriageway markings i.e. middle lane is designated as Calver Road only. This is potentially significant when considering future with and without Peel Hall development scenarios and potential mitigation.

Subject to the model being coded appropriately to address the lane designation issue it can be considered fit for purpose.

Let me know if there are any queries.

Regards

Mike

Mike Taylor
Transport Development Control Team Leader

CURRENTLY WORKING FROM HOME

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From: fiona.bennett@highgatetransportation.co.uk [mailto:fiona.bennett@highgatetransportation.co.uk]
Sent: 02 November 2020 08:20
To: Taylor, Mike <mike.taylor@warrington.gov.uk>
Cc: dave.tighe@highgatetransportation.co.uk; 'Colin Griffiths' <colin@satnam.co.uk>; 'Wright, Colin' <Colin.Wright@wsp.com>; 'Heywood, Robert' <Robert.Heywood@highwaysengland.co.uk>
Subject: RE: Peel Hall Updated VISSIM Base Model (v6)

Good morning Mike,

TECHNICAL NOTE 11

DATE:	02 November 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	A49 VISSIM Base Model Review		
PROJECT:	Peel Hall	**AUTHOR:**	TL
CHECKED:	GR	**APPROVED:**	CEW

INTRODUCTION

WSP has been commissioned by Warrington Borough Council (WBC) to provide technical advice regarding transport modelling for a development site at Peel Hall. This includes a Vissim microsimulation model of the A49 Corridor between A49 Winwick Link Road/Newton Road/ Winwick Park Avenue junction and A49/A50/Hawleys Lane junction including the M62 mainline at Junction 9. The Vissim model has been developed by Modelling Group (MG) on behalf of Highgate (and Satnam).

Between January and September 2020, WSP has undertaken a number of reviews of the 2019 base year model and concluded in Technical Note 7, dated 12th August 2020, that the base year model (July 2020 version) was fit for the purpose of testing forecast scenarios. That base year model, however, was subsequently amended in the September 2020 (public inquiry) submission. The public inquiry version of the base model was deemed not acceptable.

Further to the adjourned post inquiry meeting held on 24th September 2020, Vissim base model version 6 was supplied to WSP on the 16th October 2020. This package of information is the subject of this review. Submitted documentation includes:

- Vissim model: '2019AuditBase_v6Final' which includes the base models cover both morning and evening peak periods.
- Technical Note: 'MG0123 – A49 Corridor Vissim Base Modelling Report', dated 15 Oct 2020
- Changes Registry: 'MG0123 – A49 Warrington, Peel Hall – Changes Registry' dated 15 Oct 2020
- Calculation Spreadsheet: 'MG0123_A49Warrington_VISSIM_CalVal_v6.xlsx'

MODEL REVIEW

1. **Changes Registry**

   MG provided changes registry for the changes to the base model since the September (v5.2) version. In the changes registry it lists Reduced Speed Areas (RSA) No 1470 and 1471 has extended to improve queue lengths and journey times. However, they are not in the network. Please could the change registry therefore be reviewed for accuracy.

2. **Driving Behaviour Parameters**

   The network is coded using a range of behaviour types. The driver behaviour parameters and coding have been checked and are regarded as being satisfactory.

3. **Signals**

   Signal timings at A49 Winwick Road / Sandy Lane West have been rechecked and are coded in accordance with WBC's observations.

4. Speed Distributions and Speed Decisions

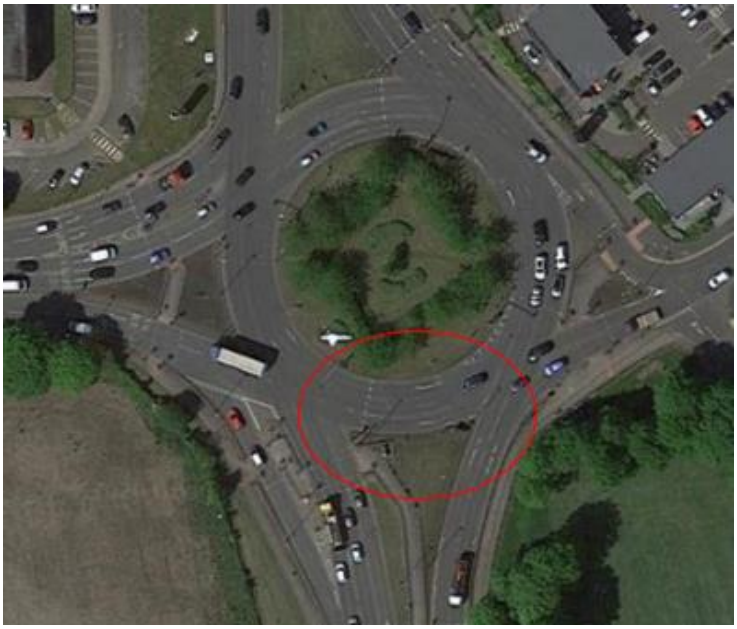
A new speed distribution 'SandyLaneWestWBDelay' has been added with maximum speed of 16 mph and used on Sandy Lane West westbound to simulate delays from side road entry points, as stated in the Changes Registry. Whilst this is generally acceptable, we would expect to see empirical data or observations to support the parameters used or increase the details of the side roads.

5. Lane Designations (A574 / Calver Road)

Figures 1 and 2 present the lane markings on the southern part of the roundabout circulatory at the A49 / Sandy Lane West junction, which is three lanes wide. The nearside lane is designated for A574 traffic and the middle lane is designated for traffic to Calver Road which turns right at the next downstream junction. In the model, the roundabout circulatory is coded as three lanes, with the nearside lane and middle lane both coded simply as ahead lanes on exit i.e. the model does not distinguish between traffic using the A574 and Calver Road. It is only immediately after exiting the roundabout does the model coding become one lane ahead and one lane dedicated right.

Figure 1 A574 / Calver Road Roundabout Lane Designation Marking

Figure 2 A574 / Calver Road Roundabout Lane Designation Marking



Figures 3 to 6 below track the path of a vehicle going westbound to A574 from the roundabout circulatory, starting in the middle lane of the roundabout circulatory (designated as Calver Road), exiting the roundabout in dedicated right turn lane to Calver Road, only switch to nearside (A574) ahead lane at stop line of the downstream signal controlled junction. This clearly does not accord with the lane designation. Either the utilisation of the lanes at the junction in this way should be demonstrated from clear observation or amended to reflect and ensure vehicles use the designated lanes appropriately. This potential issue, which may overstate junction capacity, is likely to be exacerbated when traffic volumes increase in future scenarios without and with Peel Hall development and alongside any potential mitigation measures.

Figure 3 Lane Designation on A49/ Sandy Lane West / A574 Cromwell Avenue Roundabout

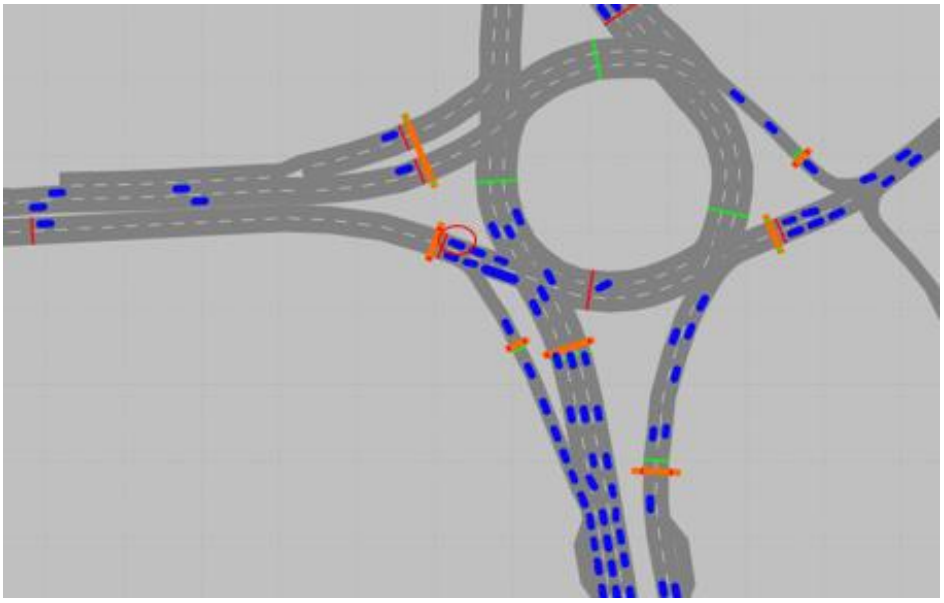


Figure 4 Lane Designation on A49/ Sandy Lane West / A574 Cromwell Avenue Roundabout

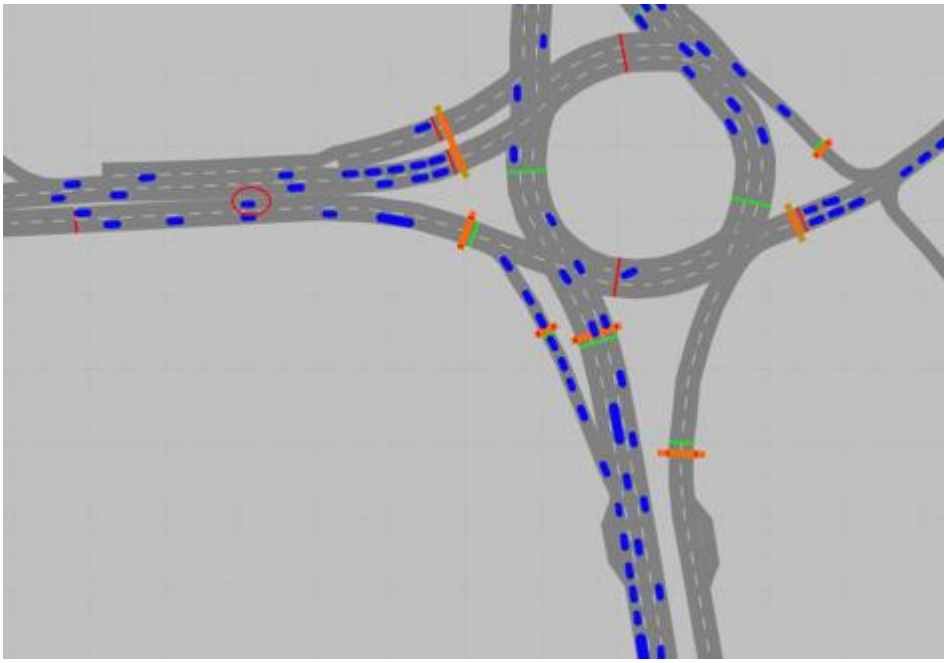


Figure 5 Lane Designation on A49/ Sandy Lane West/ a574 Cromwell Avenue Roundabout

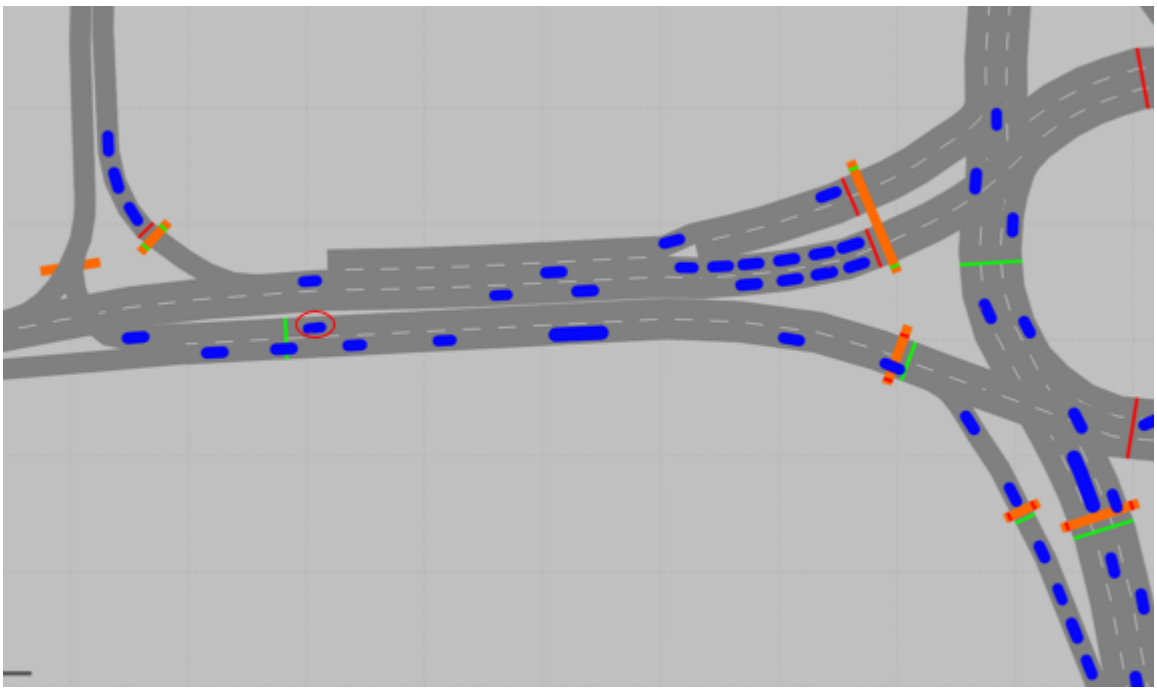
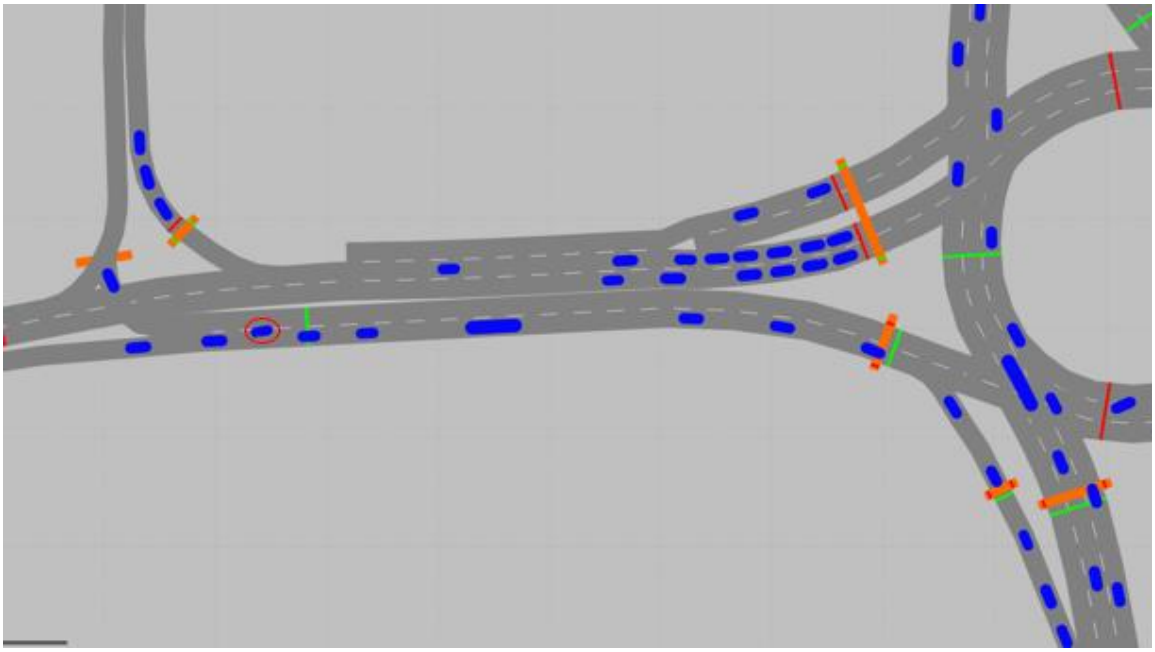


Figure 6 Lane Designation on A49/ Sandy Lane West / A574 Cromwell Avenue Roundabout



6. Calibration/ Validation

Flow calibration and journey time validation have been checked and they meet the modelling criteria set out in DMRB and TAG.

7. Queues on Local Roads

Tables 1 to 4 below present a comparison of the base year modelled queue length outputs from the September 2020 public inquiry submission and October 2020 post adjourned inquiry versions of the model, with the July 2020 version - which Warrington UTMC Team had considered to be representative of typical peak period traffic conditions.

Whilst there are some differences in the queue profiles between the July and October 2020 versions of the model, we are satisfied that the general pattern to be acceptable and to be a significant improvement on the September 2020 public inquiry submission version.

Table 1 Queue Lengths-Sandy Lane West WB AM

Sandy Lane West	Base year - July 2020 Version		Base Year – September 2020 Public Inquiry		Base Year – October 2020 Post Adjourned Inquiry	
Time	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**
07:00-07:15	89	249	178	487	42	151
07:15-07:30	261	366	435	557	95	196
07:30-07:45	346	447	452	564	92	203
07:45-08:00	369	494	308	421	133	296
08:00-08:15	352	467	316	429	282	386
08:15-08:30	253	381	436	606	289	387
08:30-08:45	258	373	540	710	261	347
08:45-09:00	202	319	687	767	125	258
09:00-09:15	135	248	716	803	56	168

Table 2 Queue Lengths-Sandy Lane West WB PM

Sandy Lane West	Base year - July 2020 Version		Base Year – September 2020 Public Inquiry		Base Year – October 2020 Post Adjourned Inquiry	
Time	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**
16:00-16:15	21	125	26	127	105	279
16:15-16:30	57	199	123	264	157	272
16:30-16:45	59	188	207	318	162	272
16:45-17:00	78	233	325	465	135	255
17:00-17:15	129	259	379	503	69	201
17:15-17:30	189	322	299	408	56	174
17:30-17:45	144	270	205	349	61	176
17:45-18:00	74	218	80	204	109	244
18:00-18:15	48	167	40	150	79	209

Table 3 Queue Lengths-Long Lane West WB AM

Long Lane	Base year - July 2020 Version		Base Year – September 2020 Public Inquiry		Base Year – October 2020 Post Adjourned Inquiry	
Time	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**
07:00-07:15	23	86	20	81	21	95
07:15-07:30	31	103	22	82	35	133
07:30-07:45	37	129	29	84	49	149
07:45-08:00	40	139	46	213	50	147
08:00-08:15	46	123	191	436	66	214
08:15-08:30	57	173	165	371	47	135
08:30-08:45	77	213	79	212	56	175
08:45-09:00	57	180	84	273	49	175
09:00-09:15	48	161	50	163	71	196

Table 4 Queue Lengths-Long Lane WB PM

Long Lane	Base year - July 2020 Version		Base Year – September 2020 Public Inquiry		Base Year – October 2020 Post Adjourned Inquiry	
Time	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**	**Average Queue (m)**	**Maximum Queue (m)**
16:00-16:15	34	167	33	157	23	103
16:15-16:30	129	300	138	301	79	229
16:30-16:45	164	343	157	335	97	245
16:45-17:00	249	596	225	446	136	299
17:00-17:15	503	750	296	515	155	366
17:15-17:30	379	572	230	425	257	463
17:30-17:45	138	369	108	275	152	384
17:45-18:00	58	162	76	196	103	329
18:00-18:15	76	227	47	150	32	114

CONCLUSIONS

The coding of the A49/ Sandy Lane West/ A574 Cromwell Avenue Roundabout does not follow the lane marking designations. Whilst the base year model validation model does not appear to be unduly affected by this mis-coding, there is concern that as a consequence the model could overstate junction capacity, and that this is likely to be exacerbated when traffic volumes increase in future scenarios without and with Peel Hall development and alongside any potential mitigation measures. It is important therefore that this issue is remedied in both the base and future year versions of the model.