Warrington Borough Council

TOWN AND COUNTRY PLANNING ACT 1990

TOWN AND COUNTRY PLANNING (APPEALS) (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

PROOF OF EVIDENCE FOR

Gary Rowland

A49 Corridor VISSIM Modelling

WSP (on behalf of Warrington Borough Council)

Public Inquiry against the decision by Warrington Borough Council to refuse planning permission for a Major Development on land at Peel Hall, Warrington

Local Reference: 2016/28492

PINS Reference: APP/M0655/W/17/3178530

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1. QUALIFICATIONS AND EXPERIENCE

1.1 My name is Gary Rowland. I hold a BEng Honours Degree in Civil Engineering from Southampton University, and have been actively engaged in traffic, transportation and highways work for over 31 years. I have worked for WSP for the last 4 years, previously working for Atkins and AECOM (formerly Maunsell and then Faber Maunsell). I am a Technical Director with WSP Transport Planning based in our Manchester office, and am WSP's Framework Director for the Warrington Transportation & Public Realm Consultancy Framework.

1.2 My experience covers a wide variety of transport-related projects advising both public and private sector clients on transport matters associated with development proposals and highway schemes.

1.3 I am very familiar with the Appeal site having represented Warrington Borough Council (hereafter referred to as the Council), whilst at Atkins, on highway-related matters at public inquiry in 2013 - in relation to an outline planning application (Council Ref: 2012/20610) for residential development of up to 150 homes with access from Mill Lane and associated works together with improvements and refurbishment of sports pitches, flood lights, and improved car parking and access at Grasmere Avenue/Windermere Avenue.

1.4 At this inquiry I am representing the Council on matters pertaining to the A49 Corridor VISSIM modelling undertaken by the Appellant's traffic modelling consultants Modelling Group (on behalf and under the direction of the Appellant's lead transport consultants Highgate Transportation) with the purpose of identifying whether the proposed mitigation works are sufficient to offset the impact of the Peel Hall development traffic along the A49 corridor under different scenarios. The evidence which I have prepared and provide for this appeal reference APP/M0655/W/17/3178530 in this proof of evidence is true and I confirm that the opinions expressed are my true and professional opinions.

1.5 In this role I am supporting Mr Mike Taylor, the Council's Transport Development Control Team Leader, and lead witness on highway and transport matters, with expert advice input from Mr Dave Rostron, the Council's UTMC, Town Centre CCTV and Parking Services Manager who will be giving evidence on operational signal control.

2. BACKGROUND AND SCOPE OF EVIDENCE

2.1 BACKGROUND

2.1.1 In 2016, an outline planning application was submitted for development at Peel Hall by Satnam Millennium Ltd. It proposed a mixed-use neighbourhood comprising:

- up to 1,200 homes
- residential care home
- a local centre, including a food store
- financial & professional services
- restaurants, cafes, a family restaurant/pub, hot food takeaways and drinking establishments
- employment uses
- primary school
- open space including sports pitches with ancillary facilities

2.1.2 In 2017, Warrington's Development Management Committee refused the application.

2.1.3 In 2018, developer Satnam Millennium Ltd, appealed against the decision. Satnam's appeal was dismissed by the Secretary of State. However, in October 2019, the High Court overturned the decision.

2.1.4 Following the original decision to dismiss the appeal Satnam and their transport consultants Highgate Transportation continued to engage with the Council (supported by WSP in their role as call-off transport consultants) in pre-application discussions to undertake the necessary transport modelling utilising the Council's multi-modal transport model (WMMTM16) to create a highway-only SATURN cordon model (Peel Hall WMMTM16) to inform the strategic impacts of the proposed Peel Hall development.

2.1.5 The outputs from the Peel Hall WMMTM16 allow more detailed modelling at specific locations and the Council agreed the junctions identified for specific analysis.

2.1.6 The Council also agreed the use of a VISSIM micro-simulation model to assess the development impacts along the A49 corridor including M62 J9 and the A49/A50 junction.

2.1.7 On 1 July 2020, Development Management Committee (DMC) considered a report regarding the Council's case in defending the appeal and preparing evidence for the inquiry in light of the new information submitted by the appellant and accepted for

consideration by the Planning Inspectorate. DMC resolved to continue to defend the appeal on highway grounds.

2.1.8 The Inquiry re-opened on 14th September 2020 and adjourned on 22nd September 2020 until 9th March 2021. The adjournment was necessary to allow further runs of the VISSIM model to be carried out in order to correct the flaws that were discovered in its operation.

2.2 STATEMENT OF COMMON GROUND

2.2.1 At the time of writing a statement of common ground is under preparation.

2.2.2 The final version of the base A49 Corridor VISSIM model [**APP29**] was issued on 16th October 2020. Following a technical review undertaken by WSP [**APP32**] the Council confirmed that the base model (v6) is acceptable on 13th November 2020.

2.2.3 The final version of the A49 Corridor VISSIM future years modelling [**APP33**] was issued on 2nd December 2020.

2.2.4 Based on the technical advice provided by WSP in its Technical Review [**APP35**] dated 8th January 2020, it is the Council's position that they have the following technical concerns regarding the future year A49 Corridor VISSIM models:

i. Underestimation in VISSIM of forecast demand in some zones, compared to the Council's SATURN highway model

ii. Vehicles in the VISSIM shown to merge on Cromwell Avenue between the proposed mitigation as it meets Cromwell Avenue and the signal junction with Calver Road

iii. Signal optimisation in the future years modelling at A49/Cromwell Avenue/Sandy Lane West roundabout within the VISSIM is not supported:

   a. Increase of start-stop movements on the circulatory carriageway

   b. Current signal timings are optimal

2.2.5 Notwithstanding the technical concerns raised above the position of the Council on the model outputs is:

i. Development impact on Sandy Lane West cannot be mitigated for given the level of latent demand[1] and queueing shown within the modelling

ii. Development impact on the A50 Long Lane cannot be assessed given the level of latent demand and queueing shown within the modelling

[1] Described in Paragraph 3.4.4 of my evidence

2.3 SCOPE OF EVIDENCE

2.3.1 I will show that a proper interpretation of the outputs from the A49 Corridor VISSIM future year modelling undertaken by the Appellant's traffic modelling consultant Modelling Group lead to the only reasonable conclusion that the impacts of development-related traffic associated with the Appeal site have not been appropriately mitigated at the A49/Cromwell Avenue/Sandy Lane West junction.

2.3.2 Further, I will show through an assessment of the technical concerns identified that there is a high probability that the modelled impacts of the development-related traffic associated with Appeal site have been under-stated.

3. A49 Corridor VISSIM Model

3.1 INTRODUCTION

3.1.1 The A49 corridor is approximately 3.5 kilometres long and includes the following junctions, shown in **Figure GR3.1**:

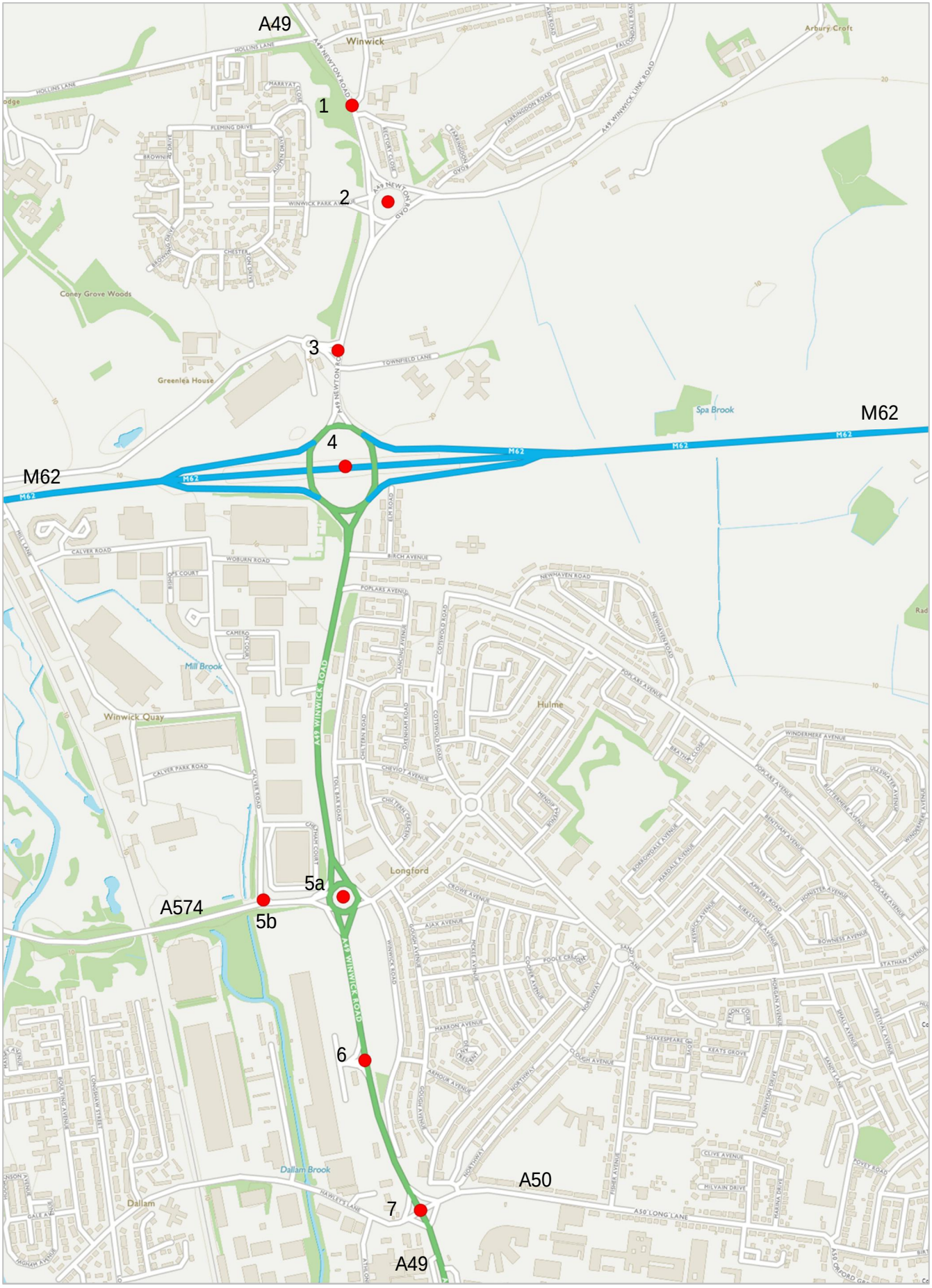
1. A49/Golborne Road priority junction
2. A49/Winwick Link Road signalised roundabout
3. Delph Lane (B&Q) signalised junction with A49
4. M62 Junction 9 signalised roundabout with the A49
5. a) Sandy Lane West/Cromwell Avenue/A49 signalised roundabout, linked with b) A574 Cromwell Avenue/Calver Road junction
6. JunctionNINE Retail Park signalised junction with the A49
7. A50/A49 signalised junction

3.1.2 It is agreed that a VISSIM micro-simulation traffic model is the appropriate tool to assess the development impacts associated with the Appeal site within the A49 corridor, including consideration of any mitigation proposals.

3.1.3 As an analytical and visual appraisal tool, VISSIM simply put, seeks to mimic real road traffic on a defined highway network. To get accurate results, vehicle movement needs to be calibrated in simulation, so that the driving behaviour reflects the local traffic conditions.

3.1.4 VISSIM traffic demand is not specified by using vehicle inputs on selected highway links / junctions with a given traffic volume but in the form of origin-destination matrices whereby traffic is 'loaded' on to the network at defined points on the edge of the network. Because of the relatively constrained nature of the A49 corridor, vehicles follow routes in the road network which have been manually defined. Therefore, the drivers in the simulation have no choice which path to follow from their start point to their destination.

Figure GR3.1: A49 Corridor



3.2 2019 BASE YEAR A49 CORRIDOR VISSIM MODEL

3.2.1 The A49 Corridor VISSIM model covers a 2.5-hour period, for the weekday morning and evening traffic peaks. In the morning peak, this period covers 07:00-09:30, with an hour 'warm-up' from 07:00-08:00, and a half-hour 'cool-down' from 09:00-09:30. In the evening peak, this period covers 16:00-18:30, with an hour 'warm-up' from 16:00-17:00, and a half-hour 'cool-down' from 18:00-18:30.

3.2.2 As is normal when assessing the traffic impact associated with a predominantly residential-led development, the VISSIM model has not been developed to assess conditions in the intervening weekday inter-peak period 09:30-16:00, the weekday off-peak period 18:30-07:00 or at weekends.

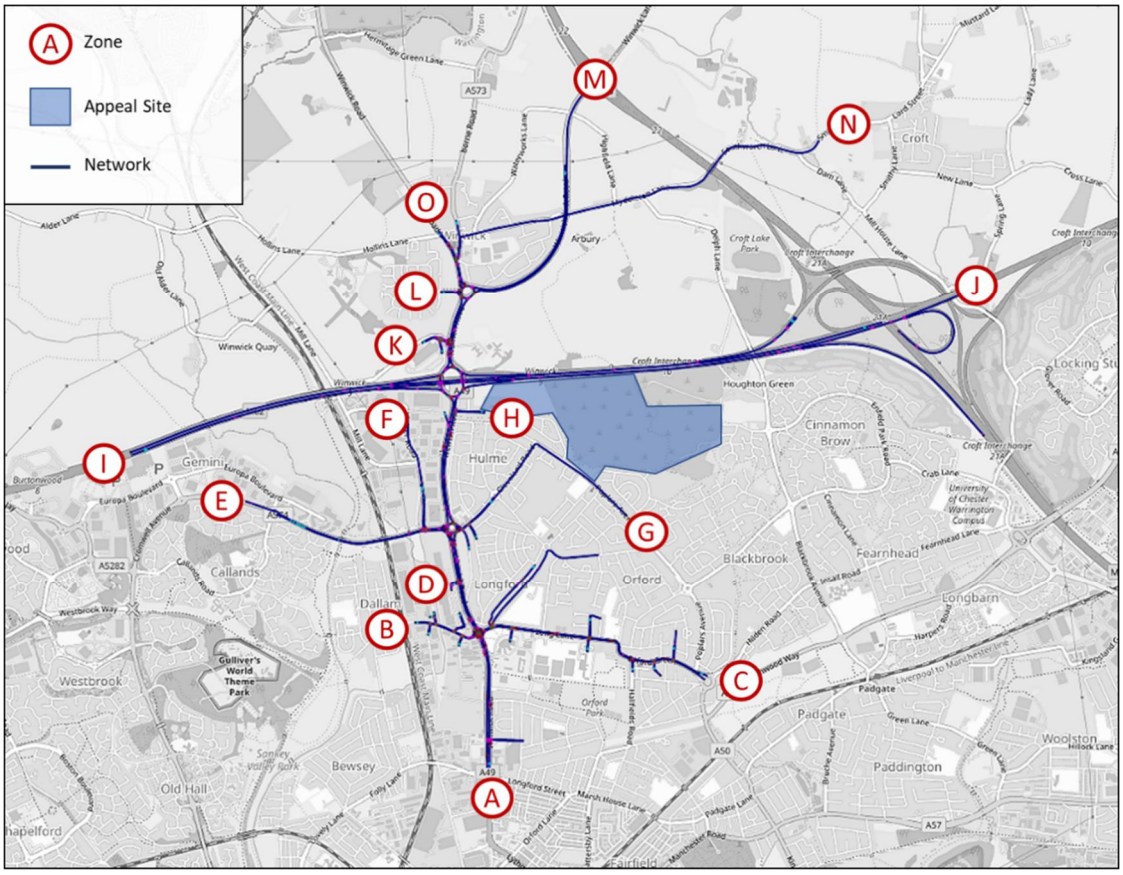
3.2.3 After several failed attempts the final version of the 2019 base year A49 Corridor VISSIM model [**APP29**] was issued on 16th October 2020.

3.2.4 Following a technical review undertaken by WSP [**APP32**] the Council confirmed that the base model (version 6) is acceptable on 13th November 2020.

3.3 FUTURE YEAR A49 CORRIDOR VISSIM MODEL

3.3.1 The future year A49 VISSIM Model highway network extents, zoning (traffic loading points) and location of the Appeal Site are illustrated in **Figure GR3.2** below.

Figure GR3.2: Future Year VISSIM Model



3.3.2 The future year VISSIM modelling, undertaken by Modelling Group, that is the focus of my evidence covers the following scenarios:

- **2027 Do Minimum** comprising background traffic growth and development-related traffic associated with the following committed developments and committed highway mitigation measures;

  Committed Development

  - JunctionNINE Retail Park (2016/29425)
  - Parkside Phase 1 (2018/32247)
  - Birchwood Park (2015/26044)

  Committed Highway Mitigation

  - A49 Winwick Road/JunctionNINE Retail Park junction improvement works
  - A49/ Delph Lane signalised junction improvement works
  - A49/Winwick Link Road junction improvement works
  - A49 Newton Road/ Hollins Lane junction improvement works
- **2027 Do Something** comprising background traffic growth and development-related traffic associated with committed developments and part build-out[2] of Peel Hall along with the committed highway mitigation measures and the Appellant's proposed mitigation package[3] for the A49 corridor comprising;
  - MOVA signal upgrade at A49/A50 four-arm signal junction. Compared to fixed time signal plans, MOVA allows 'in real time' junction controllers to alter green times in response to traffic demand which in turn, optimises the overall efficiency of the junction
  - Lengthening of the A49 northbound left-turn lane and providing an additional left-turn lane to Cromwell Avenue
  - M62 Junction 9 eastbound on-slip widening and associated works at the A49 junction
  - Ghost right turn lane provision at A49 junction with Golborne Road
- **2032 Do Minimum** comprising background traffic growth and development-related traffic associated with the committed developments and committed highway mitigation measures;
- **2032 Do Something** comprising background traffic growth and development-related traffic associated with committed developments and full build-out of Peel Hall along with the committed highway mitigation measures and the Appellant's proposed mitigation package for the A49 corridor.

[2] Part build out of Peel Hall in 2027 comprises around 600 residential dwellings (145 accessed from Poplars avenue and 20 from Birch Avenue), the care home and local centre.
[3] Elsewhere referred to as Proposed Mitigation Measures + M4 Mitigation Package

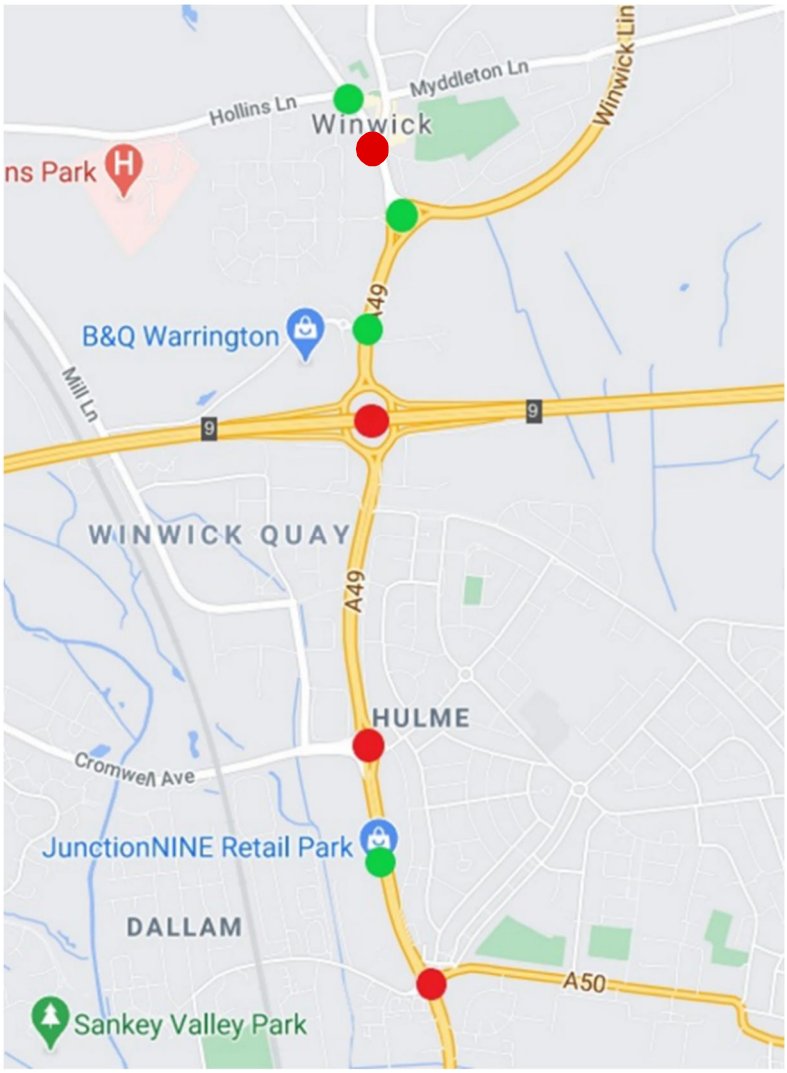
3.3.3 Additional 2022 forecast scenarios were undertaken at the request of Highways England, based on theoretical forecasts where the full Peel Hall development trips were assessed in the 2022 opening year.

3.3.4 I present in **Figure GR 3.3** below a plan showing the locations of the aforementioned committed highway mitigation **(**coloured green) and the Appellant's proposed mitigation package for the A49 corridor (coloured red).

3.3.5 The final version of the A49 Corridor VISSIM future years modelling [**APP33**] was issued on 2nd December 2020.

3.3.6 Based on the technical advice provided by WSP in its Technical Review [**APP35**] dated 8th January 2020, it is the Council's position that they do not accept the findings set out in the Access Strategy A Modelling Report [**APP33**] prepared by Modelling Group, and has several technical concerns regarding the approach adopted in the future year modelling.

Figure GR3.3: Location of Committed Highway Mitigation (coloured green) and Appellant's Proposed Mitigation Package for the A49 Corridor (coloured red)



3.4 FUTURE YEAR A49 CORRIDOR VISSIM MODEL OUTPUTS

3.4.1 In this section of my evidence, I will show that a proper interpretation of the outputs from the A49 Corridor VISSIM future year modelling undertaken by the Appellant's traffic modelling consultant Modelling Group lead to the only reasonable conclusion that the impacts of development-related traffic associated with the Appeal site have not been appropriately mitigated at the A49/Cromwell Avenue/Sandy Lane West junction.

3.4.2 A summary of the modelled A49 Corridor VISSIM network-wide performance statistics are provided in Section 3.2 of the Access Strategy A Modelling Report [**APP33**] prepared by Modelling Group. In Section 4.2 (Summary of Modelling Conclusions) the report states:

> *"For the majority of the network, the combined effect of committed and proposed mitigation measures either allow maintained levels of performance or produce significant improvements when compared against the Reference Case models."* (Paragraph 4.2.1)
>
> *"When Peel Hall development traffic is added to the network, there is an impact on levels of congestion, however, the addition of the full M4 mitigation package clearly improves upon or resolves many of the congestions contributing factors. Added to this, the mitigation measures contribute towards the creation of a network with the ability to produce comparatively improved and consistent network performance in each sequential future year scenario, particularly in the evening peak."* (Paragraph 4.2.2)

3.4.3 Unfortunately, I cannot see how this interpretation of the VISSIM model outputs bears up to closer scrutiny.

<u>An Oversaturated Highway Network (and Latent Demand)</u>

Introduction

3.4.4 In situations where a highway network becomes oversaturated, it cannot accommodate any more traffic, resulting in 'overspill' traffic not managing to enter the road network during the defined model simulation evaluation time period, for example, at the end of the modelled peak hour. The amount of traffic not managing to enter the road network and start their journey (or traffic *"stuck outside of the network"*[4] to use the Appellant's traffic modelling consultant's own words) is technically referred to as latent demand.

[4]Access Strategy A Modelling Report [**VM 2**] Paragraph 3.2.2 final bullet

3.4.5 In reality, based on industry experience, any significant levels of latent demand will lead to:

- Highway impacts extending across a much wider road network than the one assessed, and over a longer time period;
- Wider trip redistribution on to alternative routes to 'avoid' the oversaturated road network being assessed (I discuss the scope for this later in my evidence);
- Travel journeys switching to alternative transport modes (e.g. bus or rail) where this option is available; and
- Journey re-timing to avoid high levels of congestion typically referred to as peak spreading from the peak hour to the shoulders of the peak.

3.4.6 In Paragraph 2.1.1. of the Access Strategy A Modelling Report [**APP33**] prepared by Modelling Group it is stated (with emphasis applied) that:

> *"As a result of levels of queueing found during the development of future year models,* ***some*** [highway] ***links have been extended****, in agreement with the Council's audit team,* ***to ensure that*** [traffic] ***demand is able to enter the*** [VISSIM] ***model****."*

Base Year Traffic Conditions and Latent Demand

3.4.7 Under 2019 base year traffic conditions, whilst capacity issues are present at key junctions in the A49 corridor including; A49 Winwick Road/M62 Junction 9, A49 Winwick Road/A574 Cromwell Avenue/Sandy Lane West and A49 Winwick Road/ A50 Long Lane/Hawley's Lane; the road network is not oversaturated and all traffic demand is able to enter the base VISSIM model.

Future Year Peak Hour Traffic Conditions and Latent Demand

3.4.8 Under future year traffic conditions, however, the road network is predicted to be oversaturated and cannot accommodate any more traffic without intervention. I present in **Table GR3.1** below an extract of Tables 3.1 and 3.2 from the Access Strategy A Modelling Report [**APP33**] showing the predicted levels of latent demand (across the whole A49 Corridor VISSIM model network) at the end of the modelled peak hours for the 2027 and 2032 Do Minimum and Do Something (with Peel Hall and full proposed mitigation) scenarios.

Table GR3.1: Extract of Predicted Levels of Latent Demand for the Morning Peak Hour (8am to 9am) and Evening Peak Hour (5pm to 6pm)

Forecast Scenario	Network-Wide Latent Demand (vehicles)
2027 AM Peak Do Minimum	72
2027 AM Peak Do Something (with Peel Hall + mitigation)	279
2027 AM Peak Absolute and Percentage Impact	**+207 (288%)**
2032 AM Peak Do Minimum	445
2032 AM Peak Do Something (with Peel Hall + mitigation)	1162
2032 AM Peak Absolute and Percentage Impact	**+717 (161%)**
2027 PM Peak Do Minimum	583
2027 PM Peak Do Something (with Peel Hall + mitigation)	1072
2027 PM Peak Absolute and Percentage Impact	**+489 (84%)**
2032 PM Peak Do Minimum	1250
2032 PM Peak Do Something (with Peel Hall + mitigation)	1721
2032 PM Peak Absolute and Percentage Impact	**+471 (38%)**

Source: Access Strategy A Modelling Report [**APP33**], Tables 3.1 and 3.2

3.4.9 In terms of both absolute and percentage impact the level of network oversaturation is predicted to significantly worsen as result of development-related traffic associated with Appeal site, despite proposed full mitigation being in place. Higher latent demand means that the network is less able to accommodate traffic and fewer vehicles are able to complete their journey. This despite the Appellant's traffic modelling consultant's assertion at Paragraph 3.2.5 [**APP33**] that:

> *"When Peel Hall development traffic is added to the network, there is an impact on levels of congestion, however something which is immediately clear from the lower granularity, network-wide data is that the full mitigation package creates the ability for fairly consistent network performance in each sequential future year scenario, particularly in the evening peak, even with the inclusion of additional background, committed development and Peel Hall development associated traffic growth."* (Paragraph 3.2.5)

3.4.10 The network-wide performance statistic that has been used to support the Appellant's traffic modelling consultant's assertion is the average peak hour delay per vehicle, defined as:

$$\text{Average peak hour delay (secs) per vehicle} = \frac{\text{Total delay (secs) for vehicles active in the network at the end of the peak hour or completed their journey during the peak hour}}{\text{(Total number of vehicles active in the network at the end of the peak hour + Total number of vehicles completed their journey during the peak hour)}}$$

3.4.11 This network-wide performance statistic evidentially fails to take into account any impacts associated with latent delay i.e. the average latent delay (secs) for vehicles stored outside of the network at the end of the simulation evaluation period (in this case the peak hour) which can be defined as:

$$\text{Average latent delay (secs) per vehicle} = \frac{\text{Total delay (secs) for vehicles stored outside of the network at the end of peak hour (latent delay)}}{\text{Total number of vehicles stored outside of the network at the end of peak hour (latent demand)}}$$

3.4.12 In order, therefore, to present a fairer comparison of the Appellant's transport modelling consultant's own evidence before this inquiry, based on their final VISSIM modelling, I have summarised in **Table GR3.2** overleaf, a set of summary network-wide performance statistics that take account of the impact of traffic *"stuck outside of the network"* in the 2032 Do Minimum and Do Something (with full proposed mitigation) scenarios, for the morning and evening peak hours respectively.

3.4.13 This evidence clearly shows the impact that development-related traffic associated with the Appeal site with proposed mitigation has on congestion and operation of the network under future year scenarios, with:

- Less vehicles (including development trips) able to complete their journey during the morning peak hour in both 2027 and 2032, and only a very minor increase in trips in the equivalent evening peak hour; and
- An increase in average vehicle delay across all trips seeking to complete their journey in the peak hour of between 12% to 27%.

3.4.14 Accordingly, I cannot support the conclusion drawn that: "*the full mitigation package creates the ability for fairly consistent network performance in each sequential future year scenario*". Based on Modelled Group's on data, vehicles *"stuck outside of the network"* are very significantly delayed in much greater numbers.

Table GR3.2: Future Year Peak Hour Network-Wide Performance (including Latent Demand / Delay)

	2027 AM		2032 AM		2027 PM		2032 PM	
	DM	**DS**	**DM**	**DS**	**DM**	**DS**	**DM**	**DS**
Total number of vehicles active in the network at the end of the peak hour *(and impact)*	2,618	2,885 *+267*	2,952	3,086 *+134*	2,079	2,034 *-45*	2,336	2,359 *+23*
Total number of vehicles completed their journey during the peak hour (*and impact)*	17,716	17,639 *-77*	18,252	18,014 *-238*	20,818	20,867 *+49*	21,797	21,804 *+7*
Total number of vehicles stored outside of the network at the end of peak hour i.e. latent demand *(and impact)*	72	279 *+207*	445	1162 *+717*	583	1,072 *+489*	1,250	1,721 *+471*
Total Demand[5] (incl. latent demand)	**20,406**	**20,803**	**21,649**	**22,262**	**23,480**	**23,973**	**25,330**	**25,884**
Total delay (secs) for vehicles active in the network at the end of the peak hour or completed their journey during the peak hour	5,114,462	5,847,960	6,113,766	6,576,192	3,424,519	3,537,904	4,369,719	4,342,486
Total delay (secs) for vehicles stored outside of the network at the end of peak hour i.e. latent delay	61,665	37,8441	62,5450	2,192,542	1,316,518	2,588,861	2,925,046	4,015,723
Total Delay (incl. latent delay)	**5,176,127**	**6,226,401**	**6,739,216**	**8,768,734**	**4,741,037**	**6,126,765**	**7,294,765**	**8,358,209**
Average delay (secs) for vehicles active in the network at the end of the peak hour or completed their journey during the peak hour	252	285	288	312	150	154	181	180
Average delay (secs) for vehicles stored outside of the network at the end of peak hour (latent delay)	856	1,356	1,406	1,887	2,258	2,415	2,340	2,333
Average Delay (secs) (incl latent delay)	**254**	**299**	**311**	**394**	**202**	**256**	**288**	**323**
Percentage Impact		**18%**		**27%**		**27%**		**12%**

[5] Includes journeys that left their origin prior to the peak hour but were completed within the peak hour

Highway Network Oversaturation Extending Beyond the Peak Hour

3.4.15 The preceding evidence concerns the level of network oversaturation under future year peak hour traffic conditions. One may expect network performance to improve (and latent demand to reduce) in the subsequent shoulder of the peak, in response to traffic demand falling[6], as shown in **Figures GR3.4 and GR3.5.**

Figure GR3.4: 2032 Future Year Morning Peak Period (7am to 9.30am) Demand Flow Profile

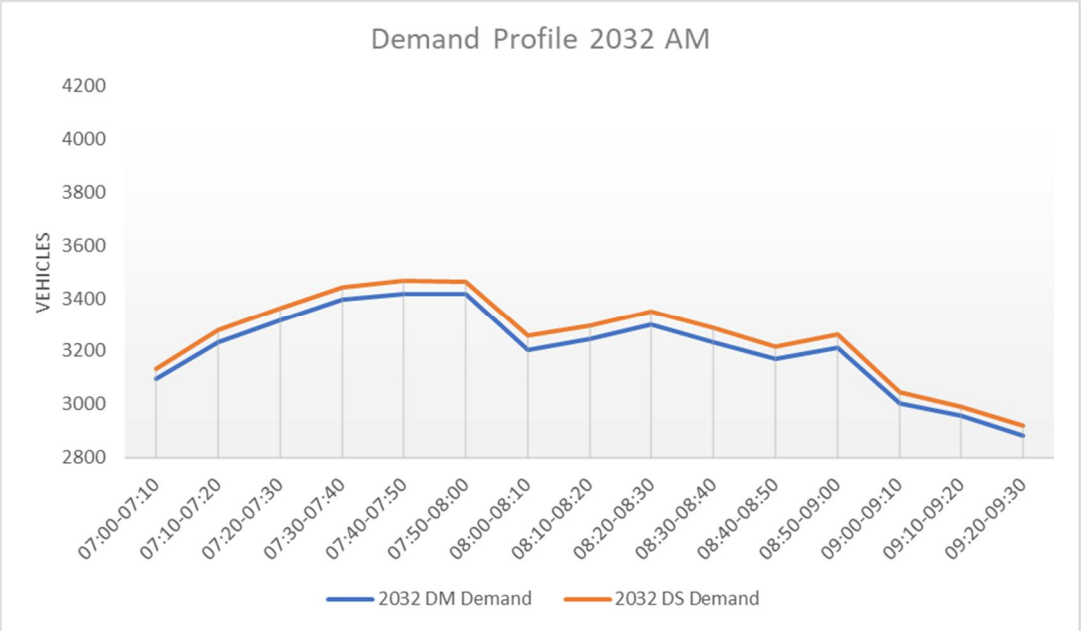
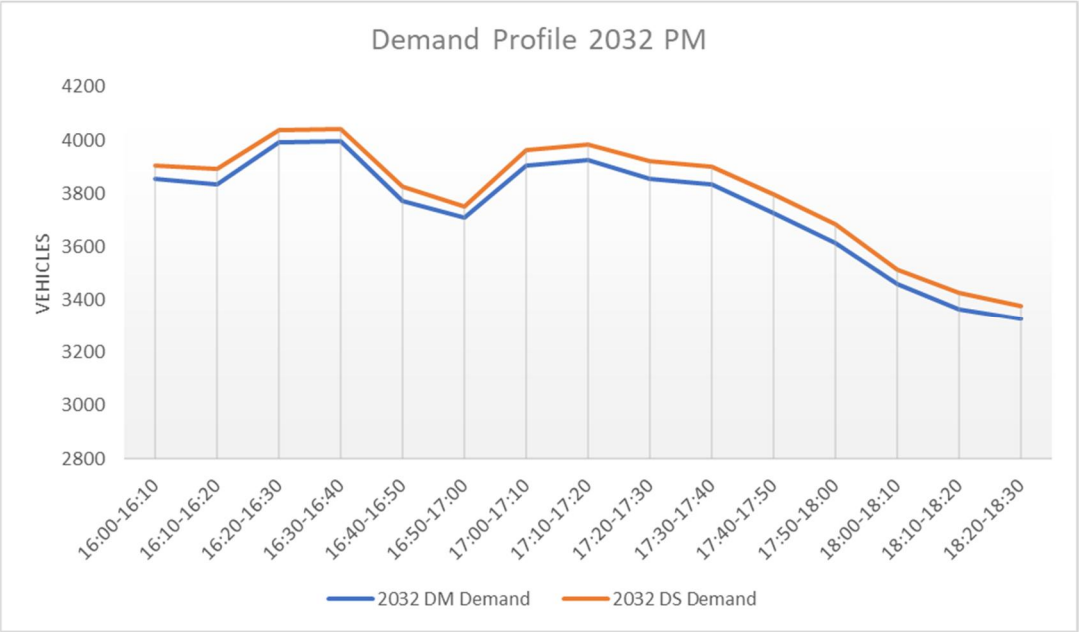


Figure GR3.5: 2032 Future Year Evening Peak Period (4pm to 6.30pm) Demand Flow Profile



[6] **Figures GR3.4 and GR3.5** represent the demand profile applied in the 2032 A49 Corridor VISSIM model for the morning and evening peak periods respectively.

3.4.16 What is evident from **Figures GR3.6 and GR3.7** below is that despite traffic demand falling, the level of latent demand is shown to continue to rise throughout the half hour 'cool down' period, following the morning and evening peak hours. Furthermore, the gap between Do Minimum and Do Something (with Peel Hall and proposed full mitigation) is shown to increasingly widen. Consequently, poor network performance will extend in to a much longer period of the working day, and into quieter parts of the evening. i.e. beyond peak spreading from the peak hour to the shoulders of the peak.

Figure GR3.6: 2032 Future Year Morning Peak Period (7am to 9.30pm) Latent Demand Flow Profile

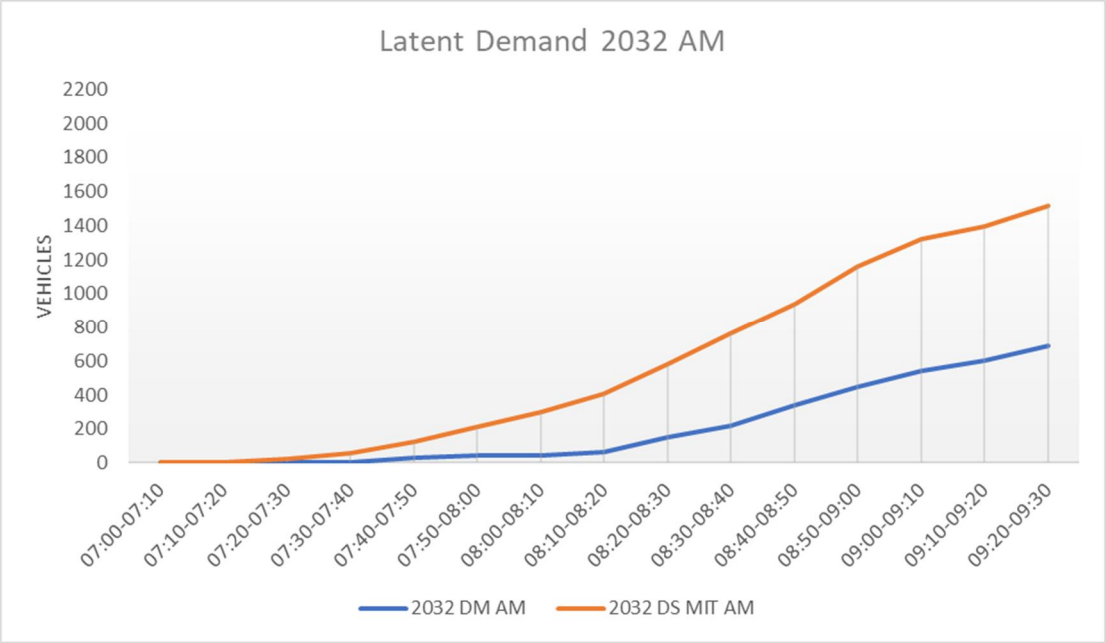
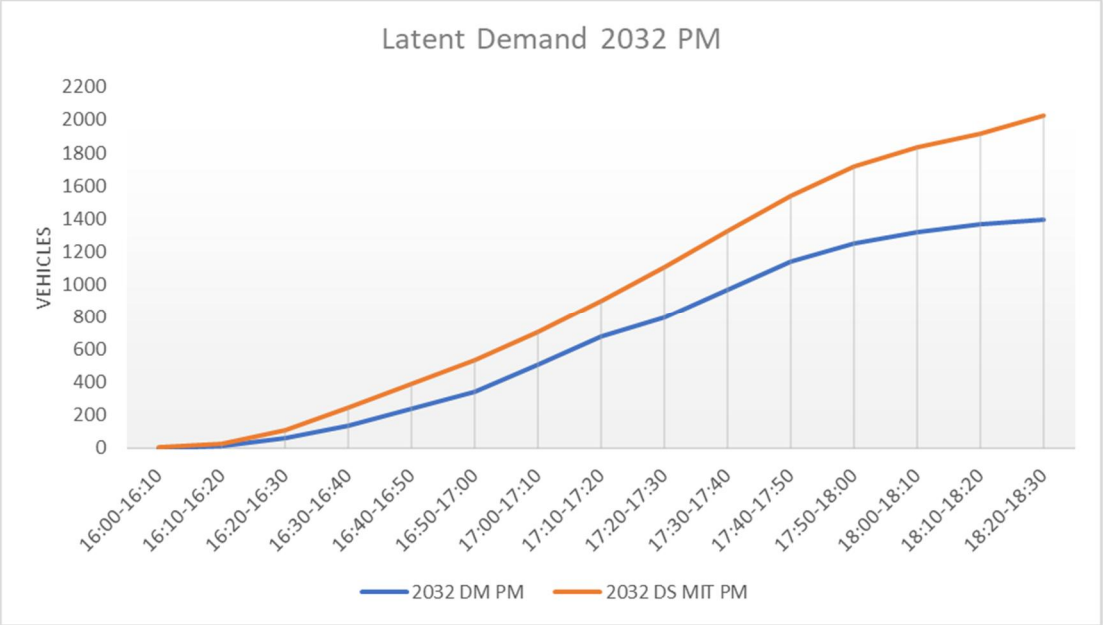


Figure GR3.7: 2032 Future Year Evening Peak Period Demand (4pm to 6.30pm) Latent Demand Flow Profile



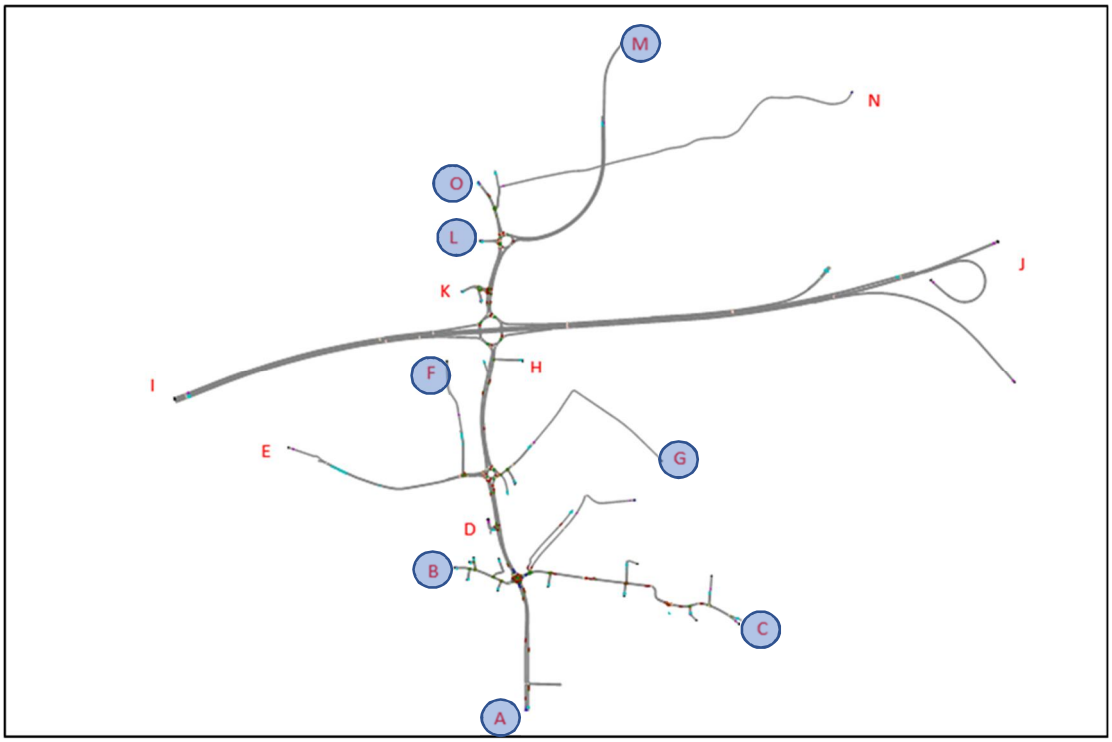
Areas of Network Oversaturation

3.4.17 The A49 Corridor VISSIM model is a 'closed' network, which on the basis of preceding evidence does not fully capture the network-wide operational impacts. It follows that the areas of network oversaturation giving rise to latent demand (vehicles stuck or store outside of the network) will be attributed to those entry points on to the network where **queues exceed** their modelled length, namely:

- Approaches to the A49/A50/Hawley's Lane signal junction, specifically
  - A49 Winwick Road northbound **(Zone A)**
  - Hawley's Lane **(Zone B)**
  - A50 Long Lane **(Zone C)**
- Approaches to the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout, and A574 Cromwell Avenue/Calver Road signal junction specifically
  - Calver Road **(Zone F)**
  - Sandy Lane West **(Zone G)**
- Approach to the A49/Winwick Link Road signalised roundabout, specifically
  - Winwick Park Avenue **(Zone L)**
  - A49 Winwick Link Road **(Zone M)**
  - A49 Newton Road southbound **(Zone O)**

3.4.18 These locations are presented in **Figure GR3.8** below.

Figure GR3.8: Areas of Network Oversaturation (Model Zones A to O)



3.4.19 I present below in **Table GR3.3** the level of latent demand[7] (vehicles stuck or stored outside of the network) at a zonal level at the end of the modelled peak periods, for the 2032 morning and evening peak periods respectively.

Table GR3.3: Level of Latent Demand by Zone at end of the 2032 Morning Peak Period (7am to 9.30am) and 2032 Evening Peak Period (4pm to 6.30pm)

		2032 AM Peak Period		2032 PM Peak Period	
Zone	**Link**	**DM**	**DS**	**DM**	**DS**
A	A49 Winwick Road N/B	0	0	251	415
B	Hawley's Lane	0	0	477	524
C	A50 Long Lane	415	995	588	774
F	Calver Road	164	199	75	30
G	Sandy Lane West	0	0	0	98
L	Winwick Park Avenue	67	125	0	165
M	A49 Winwick Link Road	33	132	0	0
O	A49 Newton Road S/B	0	17	0	1
Total	**All Zones**	**680**	**1486**	**1393**	**2005**
End of Peak Period	*Network-wide statistic*	*686*	*1515*	*1393*	*2024*

3.4.20 In terms of network oversaturation impacts associated with the development-related traffic associated with the Appeal Site, under 2032 future year peak period traffic condition, these figures present a picture of:

- Very significant worsening of conditions on A50 Long Lane in the 2032 morning peak period, with latent demand increasing from 415 vehicles to 995 vehicles;
- Worsening of conditions on Calver Road and at the A49/Winwick Link Road signalised roundabout in the morning peak period, with latent demand increasing from 164 vehicles to 199 vehicles;
- Significant worsening of conditions on all approaches to the A49/A50/Hawley's Lane signal junction in the evening peak period, with latent demand increasing from 251 vehicles to 415 vehicles on A49 Winwick Road northbound, from 477 vehicles to 524 vehicles on Hawley's Lane, and from 588 vehicles to 774 vehicles on A50 Long Lane;
- Operational issues for the Winwick Park Avenue arm (short link) at the A49/Winwick Link Road signalised roundabout in the evening peak period; and

[7] To ensure consistency with the network-wide latent demand data presented in **Figures GR3.6 and GR3.7**, I have extracted data at zonal level based on an average of the same ten model run "seeds", employed by the Appellant's transport modelling consultant, to account for daily flow fluctuations in line with good practice.

- A situation where there is predicted to be no latent demand issues on Sandy Lane West without Peel Hall development in either peak period, but with 98 vehicles shown to not be able to start their journey by the end of the evening peak period with Peel Hall development, despite full mitigation in place and despite extending the link to encompass the full length of Cleveland Road and a significant length of Poplars Avenue as far as the furthermost junction with Windermere Avenue, a distance of some 1.4 km (equivalent to circa 160 stationary or slow moving vehicles).

3.4.21 In light of these findings, comparison of journey times for trips passing through the network carry very limited weight as they fail to capture the delays beyond the limits of the network – it would akin to comparing journey times within a set of roadworks and not capturing the journey time impacts on the approaches.

3.4.22 In the same way that drivers aware of roadworks will look to diversionary alternatives as part of the journey planning, so traffic networks 'seek' an equilibrium state through trip reassignment where alternative routes across all origin-destination pairs are available.

3.4.23 Whilst traffic routeing through the A49 Corridor VISSIM model under each traffic demand scenario between origin-destination pairs, has been informed by a higher tier highway model (Peel Hall WMMTM16 – developed in the SATURN software package, which is itself a sub-model of the Council's Borough-wide multi-modal transport model), it is acknowledged that as VISSIM can provide more detailed junction delay calculations a case could be made for a further redistribution of some of the latent demand where viable alternative routes are available.

3.4.24 Within this context, and whilst the impacts associated with the development-related traffic associated with the Appeal Site at the A49/A50/Hawley's Lane signal junction are not in dispute and a contribution to the MOVA signal upgrade of the junction is required, development-related traffic associated with the Mill Lane access from the Appeal Site does have potential for some alternative routeing to complete their journeys – which combined may moderate the impact at this location.

3.4.25 This is not the case for development-related traffic associated with the Poplars Avenue access from the Appeal Site. For journeys to / from A574 Cromwell and A49 Winwick Road north – Poplars Avenue / Cleveland Road / Sandy Lane West presents the only realistic option available.

Operational Impacts Affecting the Sandy Lane West Approach to the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout

3.4.26 I have already shown that based on the VISSIM modelling that underpins the Access Strategy A Modelling Report [**APP33**] prepared by Modelling Group, that the network is not capable of accommodating development-related traffic on to the Sandy Lane West approach to the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout, despite extending the link to encompass the full length of Cleveland Road and a significant length of Poplars Avenue as far as the furthermost junction with Windermere Avenue.

3.4.27 To better understand how traffic conditions are shown to deteriorate on the Sandy Lane West approach to the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout, I present in **Figure GR3.10** a comparison of queue lengths between future year Do Minimum and Do Something (with Peel Hall and proposed full mitigation) scenarios for 2027 and 2032, for the morning and evening peak periods. **Figure GR 3.9** below allows a visual representation as to how those queue lengths may translate spatially.

Figure GR3.9: Link Distance Markers

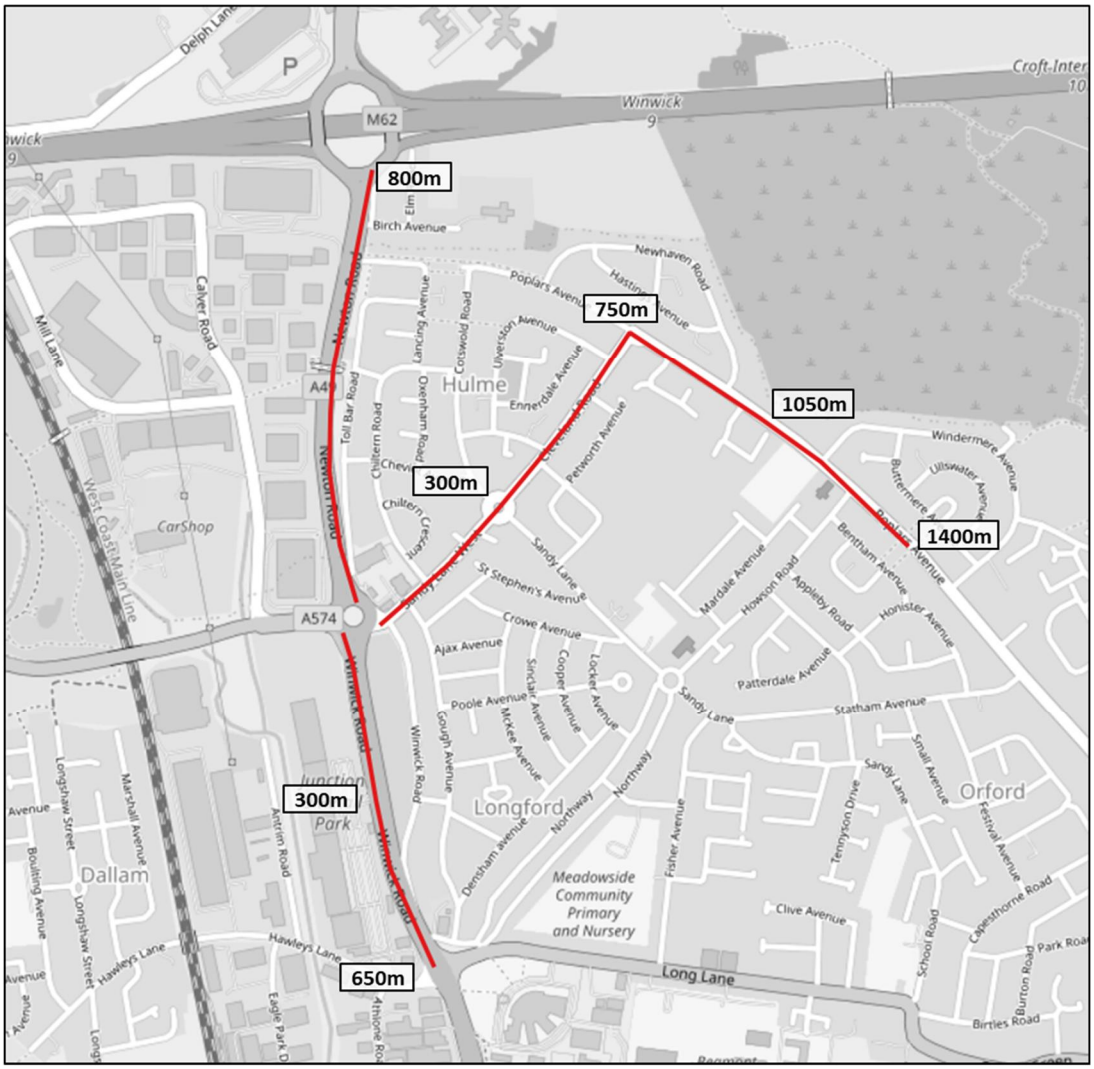
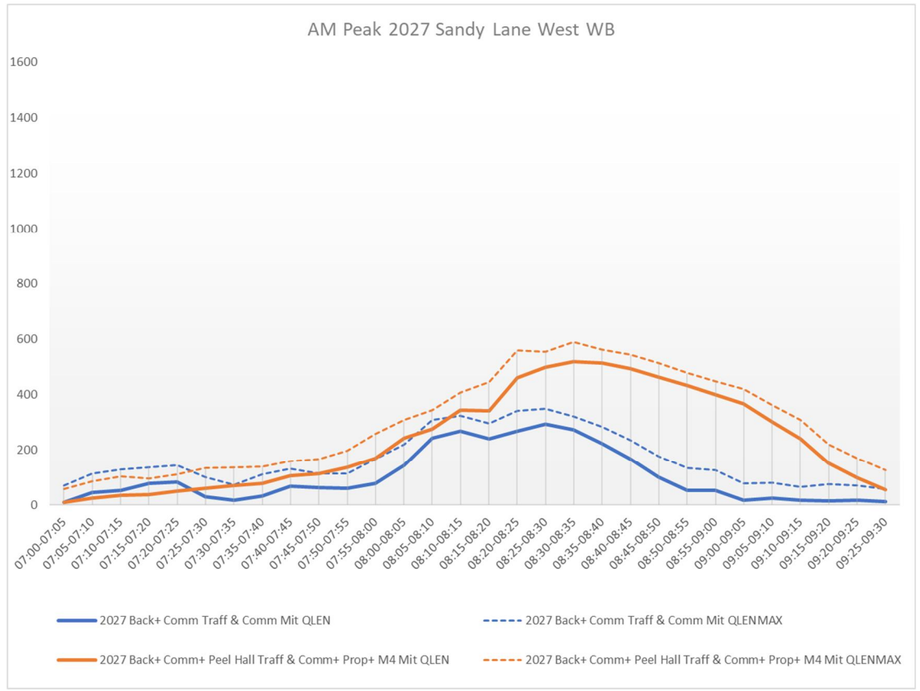
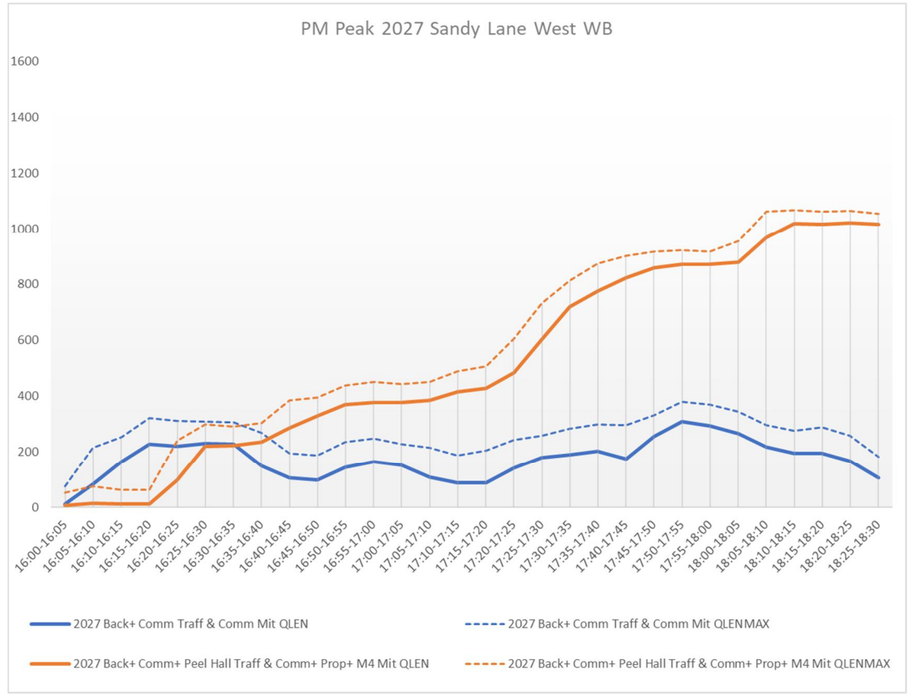
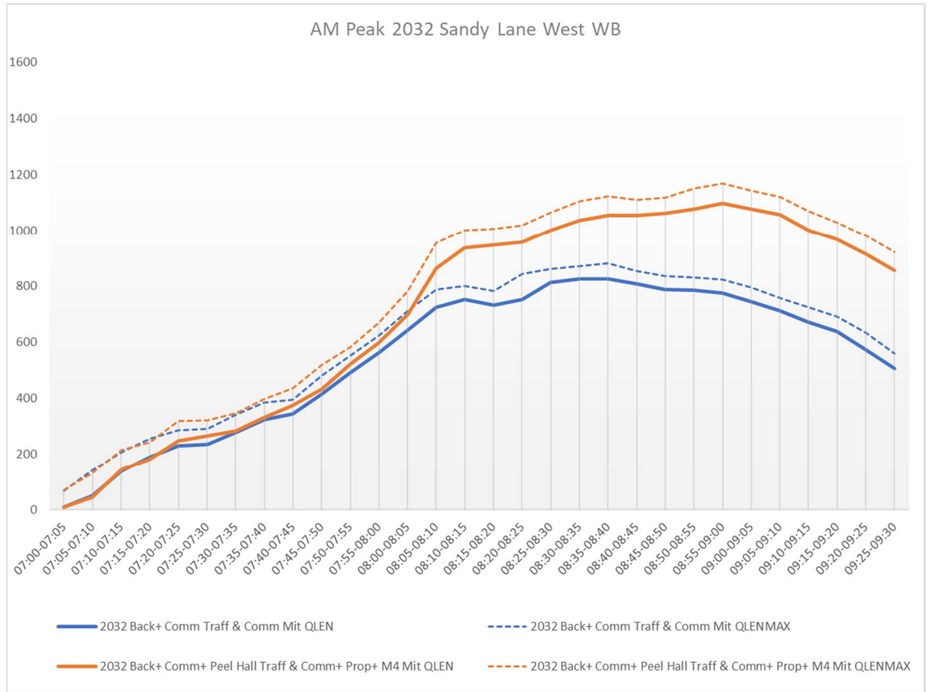
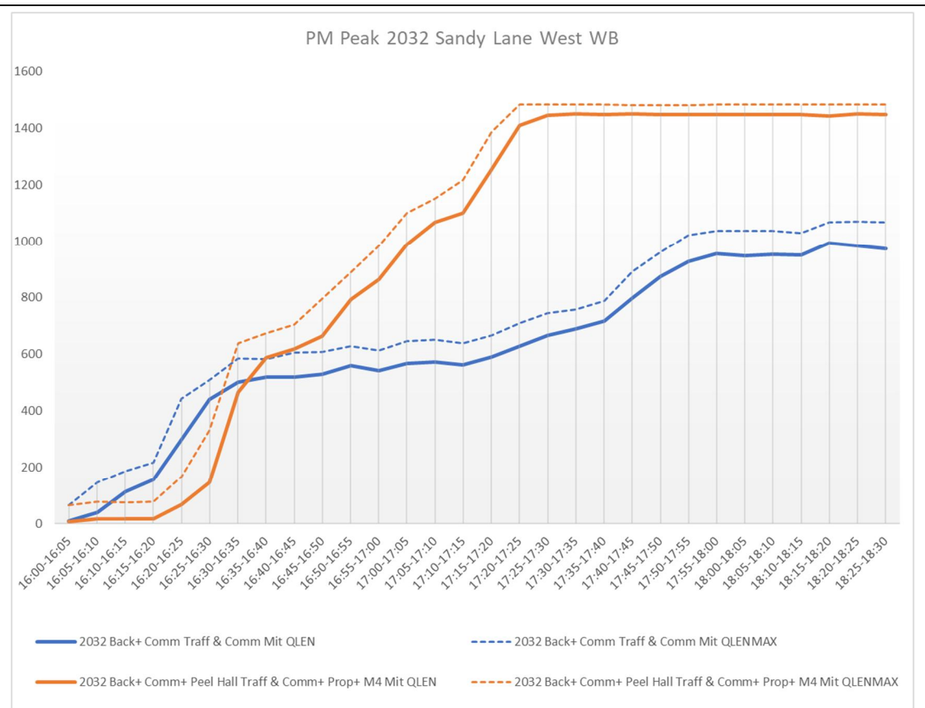


Figure GR3.10: Queue Length Comparison between Do Minimum and Do Something (with Peel Hall and Proposed Full Mitigation) for 2027 and 2032 Morning and Evening Peak Periods









3.4.28 In reality, any queue that extends back beyond 300 metres to the roundabout would affect both Cotswold Road (from the north) and Sandy Lane (from the south-east) in addition to Cleveland Road (from the north-east), compounding network operation issues in the surrounding 'Poplars' residential area.

3.4.29 In terms of impacts associated with the development-related traffic associated with the Appeal Site on the levels of predicted queueing traffic on the Poplars Avenue / Cleveland Road / Sandy Lane West, under 2032 future year peak period traffic conditions, **Figure GR3.10** shows that despite full mitigation, queues lengthen markedly in 2027 and 2032 across both peak periods, especially in the 2032 evening peak period with rapid progression of queues extending back to the network limits of the model, a distance of some 1.4 km, by 5.20 pm, with no evidence of queues receding before the end of the modelled evening peak period at 6.30 pm.

3.4.30 On this evidence I cannot agree with the Appellant's traffic modelling consultant's summary conclusion in the Report [**APP33**] that:

> *"When Peel Hall development traffic is added to the network, there is an impact on levels of congestion, however, the addition of the full M4 mitigation package clearly improves upon or resolves many of the congestions contributing factors."* (Paragraph 4.2.3)

3.4.31 Indeed, this summary conclusion is somewhat contradicted by their own findings with regards to Sandy Lane West:

> *"it not possible to fully mitigate the delays with the signal green time at the junction with the A49, as the constraint is further to the east, slowing vehicles before they get to the signalised junction."* (Paragraph 3.4.26)

3.4.32 This accords with the Council's case that Sandy Lane West / Cleveland Road / Poplars Avenue is not an appropriate access route to serve this Appeal Site; given the existing demands placed upon it – which is covered in Mr Taylor's evidence, on behalf of the Council, before this Inquiry.

3.5 A49 CORRIDOR VISSIM MODEL – ASSESSMENT OF TECHNICAL ISSUES

3.5.1 Based on the technical advice provided by WSP in its Technical Review [**APP35**] dated 8th January 2020, it is the Council's position that they have the following technical concerns regarding the future year A49 Corridor VISSIM models:

i. Underestimation in VISSIM of forecast demand in some zones, compared to the Council's SATURN highway model

ii. Vehicles in the VISSIM shown to merge on Cromwell Avenue between the proposed mitigation as it meets Cromwell Avenue and the signal junction with Calver Road

iii. Signal optimisation in the future years modelling at A49/Cromwell Avenue/Sandy Lane West roundabout within the VISSIM is not supported:

a. Increase of start-stop movements on the circulatory carriageway

b. Current signal timings are optimal

3.5.2 I will show through an assessment of the technical issues identified that there is high probability that the modelled impacts of the development-related traffic associated with Appeal site have been under-stated.

Technical Issue 1: Shortfall in Do Something A49 Corridor VISSIM Model Demand

3.5.3 In this section of my evidence I will explain how an underestimation of forecast demand (the number of vehicle trips between each zone origin-destination pair, hereafter referred to as zone pair) in the VISSIM forecast models occurs, and what impact this has on the operation of Sandy Lane West/Cromwell Avenue/A49 signalised roundabout.

3.5.4 In order to produce the forecast demand for the VISSIM forecast models, data is required from the Peel Hall WMMTM16 cordon model. The Peel Hall WMMTM16 cordon model is a subset of the Council's multi-modal transport model (Warrington Multi-Modal Transport Model (WMMTM)). The multi-modal transport model covers the entire Borough. Only an area around the Peel Hall site has been taken to form the Peel Hall WMMTM16 cordon model.

3.5.5 The VISSIM base year model has been validated to 2019 observed traffic data. This means that vehicle turning movements at each modelled junction and vehicle journey times in the VISSIM model replicate conditions in April 2019 when the data was collected. The Peel Hall WMMTM16 cordon model is extracted from a borough-wide model and as such reflects more strategic trip movements across Warrington. Its flows and turning movements will not be as accurate along the A49 corridor as that of the VISSIM model.

3.5.6 The Peel Hall WMMTM16 cordon model has the following modelled years, time periods and scenarios as the VISSIM model. These are:

- Base year – 2018;
- Forecast years – 2022, 2027 and 2032;
- Time periods – AM (08:00-09:00) and PM (17:00-18:00); and

- Scenarios – Do Minimum (without Peel Hall) and Do Something (with Peel Hall).

3.5.7 The Peel Hall WMMTM16 cordon model is a highway only model developed using SATURN modelling software and covers a wider area than the VISSIM model, which is simply a corridor model of the A49. The Peel Hall WMMTM16 cordon model network is shown in **Figure GR3.11** overleaf.

3.5.8 The Peel Hall WMMTM16 cordon model allows vehicles to make a route choice between their origin and destination pairs. Thus, as traffic increases in forecast years due to natural growth or build out of significant developments, and certain links and junctions become busier, vehicles within the model can switch to an alternative route. This is known as traffic reassignment.

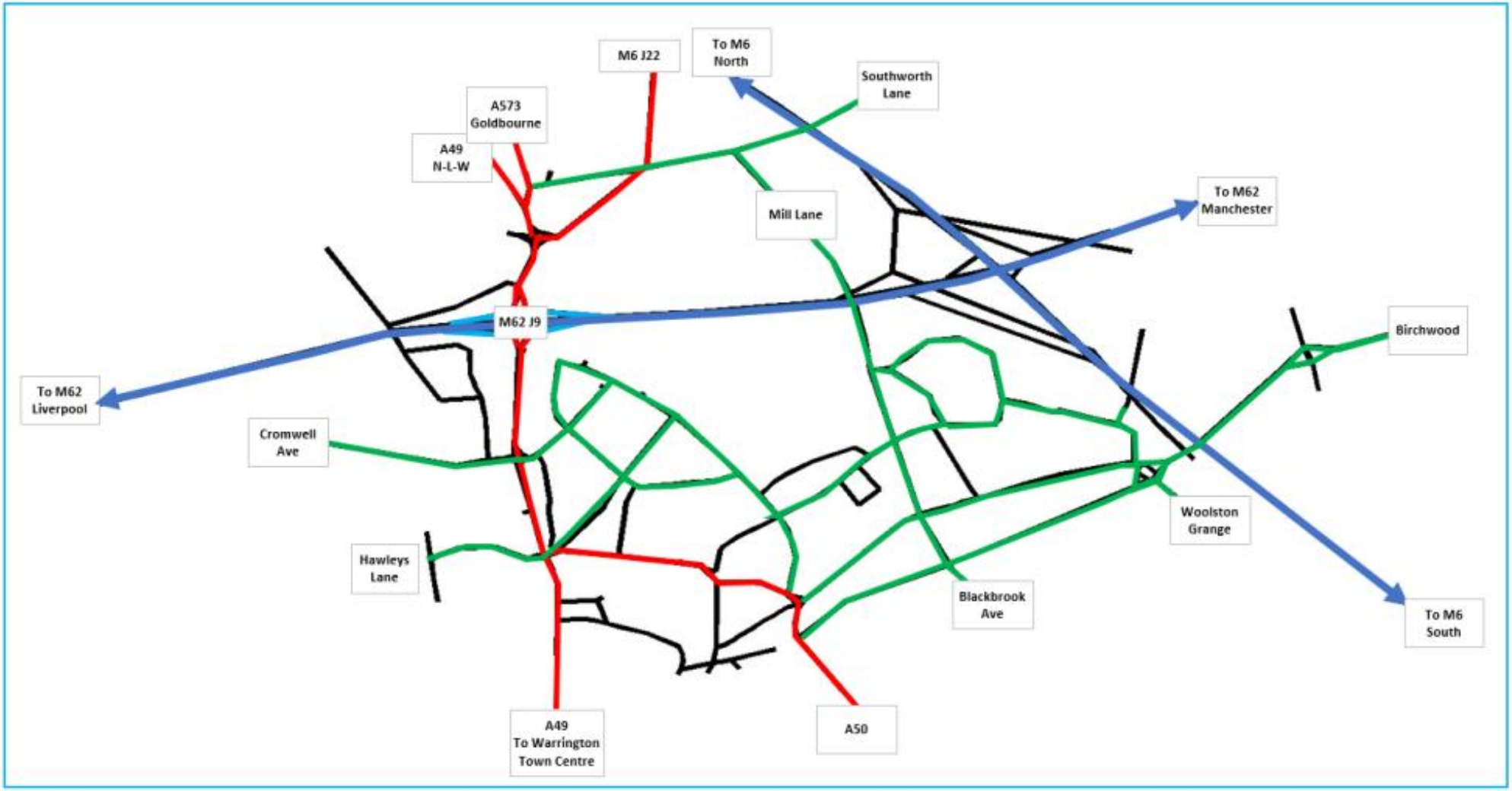
3.5.9 The forecast demand for the VISSIM forecast models uses data from the Peel Hall WMMTM16 cordon model in order to ensure that traffic reassignment and explicit development growth is also reflected in the VISSIM model. Direct output from the Peel Hall WMMTM16 cordon model (i.e. trips between origin-destination zone pairs) cannot be applied in VISSIM due to the differences in the base year flows (described above in 3.5.5) from which all forecasting takes place.

3.5.10 The forecast demand building process begins by extracting from the Peel Hall WMMTM16 cordon model the vehicle movements along the same network that is modelled in the VISSIM model (i.e. the A49 and side arms). The result is matrices of vehicle movements from the Peel Hall WMMTM16 cordon model between the same zone pairs as used in the VISSIM model (Zones A-O in **Figure GR3.2**). Hereafter referred to as A49 Peel Hall WMMTM16 cordon matrices.

3.5.11 These A49 Peel Hall WMMTM16 cordon matrices are used to derive growth factors that are applied to the VISSIM base year demand. The percentage change in the number of trips between zone pairs, between the base year and the forecast years is calculated. This percentage change is applied to the same zone pairs in the VISSIM base year demand. This is how the forecast demand for the VISSIM Do Minimum scenarios is calculated.

3.5.12 For the Do Something forecast demand the process is more complex. This is because the Do Something scenarios contain the agreed development trips associated with the Peel Hall development. It has been agreed between all parties that the absolute number of Peel Hall development trips should be the same in both the Peel Hall WMMTM16 (SATURN) cordon model and A49 Corridor VISSIM models.

Figure GR3.11: Peel Hall WMMTM16 Cordon Model Network



Source: Appendix 10 Highgate Transportation Transport Assessment Addendum (March 2020)

3.5.13 The percentage change in trips between zone pairs (derived from A49 Peel Hall WMMTM16 cordon base year and Do Something matrices) cannot be applied directly to the VISSIM base year demand. This is because there are differences in base year flows between the VISSIM and Peel Hall WMMTM16 cordon models, and this could result in altering the absolute number of development trips in the VISSIM model.

3.5.14 The percentage change in trips between zone pairs from A49 Peel Hall WMMTM16 cordon matrices is derived by subtracting the development trips from the Do Something matrices and then calculating the percentage change in trips between zone pairs between the reduced Do Something and the base year matrices. This percentage change in trips between zone pairs is applied to the VISSIM base year demand and the development trips are then added to complete the VISSIM Do Something demand.

3.5.15 The forecast demand building process is shown in **Figure GR3.12**. This shows how the demand from the Peel Hall WMMTM16 cordon model is used with the VISSIM base year demand to produce the VISSIM forecast demand for both Do Minimum and Do Something scenarios.

3.5.16 In WSP's Technical Review [**APP35**], illogical outputs from the VISSIM Do Something demand building process were identified. The step where the development trips were subtracted from the A49 Peel Hall WMMTM16 cordon Do Something matrices resulted in negative trips between certain zone pairs. These pairs were listed in the Technical Review. It has not been explained to the Council how this error has occurred.

3.5.17 For some of the zone pairs identified this does not produce a problem as there are no trips in the VISSIM base year demand, i.e. negative percentage change applied to zero trips produces zero trips. However, for the zone pair of Zone D (JunctionNINE Retail Park) and Zone G (Sandy Lane West) in the **Evening Peak model only**, in both directions, this results in a negative percentage change factor being applied to the VISSIM base year demand. Conditional formatting within the traffic demand forecasting spreadsheet, supplied by the Appellant's traffic modelling consultant, highlights such occurrences with formulae applied that set these trip numbers to 0.1. Indeed, the VISSIM model would not be able to run with any negative values input.

3.5.18 The route of trips in the model between Zone D and Zone G is via the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout. Any underestimation of demand could imply capacity at the roundabout that will not exist.

3.5.19 I present in **Table GR3.4** the calculation (Rows 1-12), used by the Appellant's traffic modelling consultant for the zone pairs between Zone D (JunctionNINE Retail Park) and Zone G (Sandy Lane West), and my 'correction' (Row 13).

Figure GR3.12: Derivation Diagram of VISSIM Forecast Traffic Demand Matrices

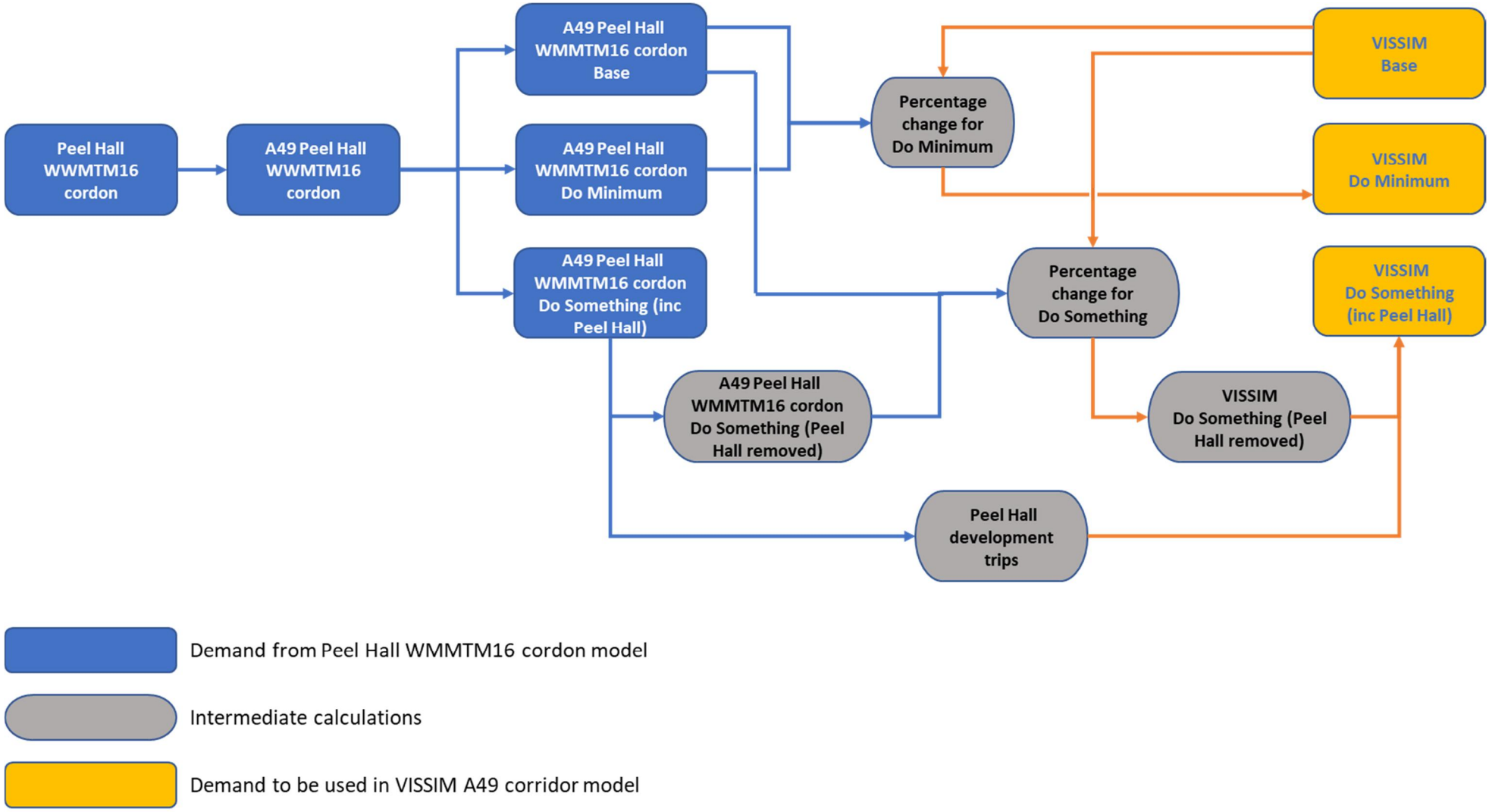


Table GR3.4: Demand forecasting process for Light Vehicles Between Zone D (JunctionNINE Retail Park) and Zone G (Sandy Lane West) for Evening Peak Hour models.

		Zone D to Zone G			Zone G to Zone D		
No	**Step**	**2022 PM**	**2027 PM**	**2032 PM**	**2022 PM**	**2027 PM**	**2032 PM**
1	A49 Peel Hall WMMTM16 cordon Base	3	3	3	1	1	1
2	A49 Peel Hall WMMTM16 cordon Do Minimum	2	5	8	1	1	1
3	Change from Base to Do Minimum (2÷1)	67%	167%	267%	100%	100%	100%
4	A49 Peel Hall WMMTM16 cordon Do Something (incl devs)	3	7	7	1	1	1
5	A49 Peel Hall WMMTM16 cordon development trips	6	11	20	11	12	11
6	A49 Peel Hall WMMTM16 cordon Do Something (without devs) (4-5)	-3	-4	-13	-10	-11	-10
7	Change from A49 Peel Hall WMMTM16 cordon Base to Do Something (without devs) (6÷4)	-100%	-57%	-186%	-1000%	-1100%	-1000%
8	VISSIM Base	67	67	67	14	14	14
9	**VISSIM Do Minimum (8x3)**	**45**	**112**	**179**	**14**	**14**	**14**
10	VISSIM Do Something (without devs) (8x7)	-67	-38	-124	-140	-154	-140
11	Adjusted VISSIM Do Something (without devs)	0	0	0	0	0	0
12	**VISSIM Do Something (with devs) (5+11)**	**6**	**11**	**20**	**11**	**12**	**11**
13	**VISSIM Do Something (with devs) 'corrected' (5+9)**	**51**	**123**	**199**	**25**	**26**	**25**

3.5.20 Row 6 shows the step in the process where negative trip values occur when the development trips are subtracted from the A49 Peel Hall WMMTM16 cordon Do Something matrix. Following this through results in Row 11 being set to zero. (Zero is presented for simplification, the real figure used is 0.1).

3.5.21 Row 9 represents the VISSIM Do Minimum and Row 12 the VISSIM Do Something trips. Comparing the values in these rows for Zone D to Zone G show a difference (Row 9 – Row 12) of 39 trips in 2022, 101 trips in 2027 and 159 trips in 2032. The

differences for Zone G to Zone D are much smaller but as with Zone D to Zone G are a result of a calculation error.

3.5.22 To demonstrate the impact this underestimation could have on the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout I have adjusted the VISSIM forecast demand to correct this error and re-run the Evening Peak models.

3.5.23 In order to 'correct' for this shortfall in trips, and without being sighted on the source of the error, I have simply added the Peel Hall development trips (Row 5) to the VISSIM Do Minimum trips (Row 9) as shown in Row 13 above. I consider this provides a more robust forecasting assumption that will ensure there is no demand shortfall in the VISSIM Do Something models.

3.5.24 To put this in context, in the 2032 Do Something (with Peel Hall and proposed full mitigation) evening peak this results in an 'additional' 193 trips out of matrix total of 23,438 trips.

3.5.25 I have assessed the impact that adjusting the forecast demand flow to address this modelling shortfall has on network performance and present this at the end of this section of my evidence.

Technical Issue 2: A49 Winwick Road Proposed Mitigation Scheme at A49/Cromwell Avenue/Sandy Lane West Roundabout

Introduction

3.5.26 The Appellant's proposed mitigation package for the A49 corridor includes lengthening of the A49 northbound left-turn lane and providing an additional left-turn lane to A574 Cromwell Avenue. Two versions of this arrangement were submitted to the Council and Highways England by the Appellant's lead transport consultants on the 6th August 2020 – with the same drawing number 1901/27.

3.5.27 The first version was submitted, via email correspondence [**CF55**] issued by the Appellant's lead transport consultants Highgate Transportation, and is reproduced in **Figure GR3.13** overleaf. The second version is contained in the Access Strategy A Modelling Report [**APP33 -** Appendix D2] prepared by Modelling Group and reproduced in **Figure GR3.14** below, the most notable difference being the absence of lane designation markings associated with the double left turn filter to A574 Cromwell Avenue.

Figure GR3.13: Appellant's Proposed Mitigation at A49/Cromwell Avenue/Sandy Lane West Roundabout (supplied by Highgate Transportation in email correspondence)

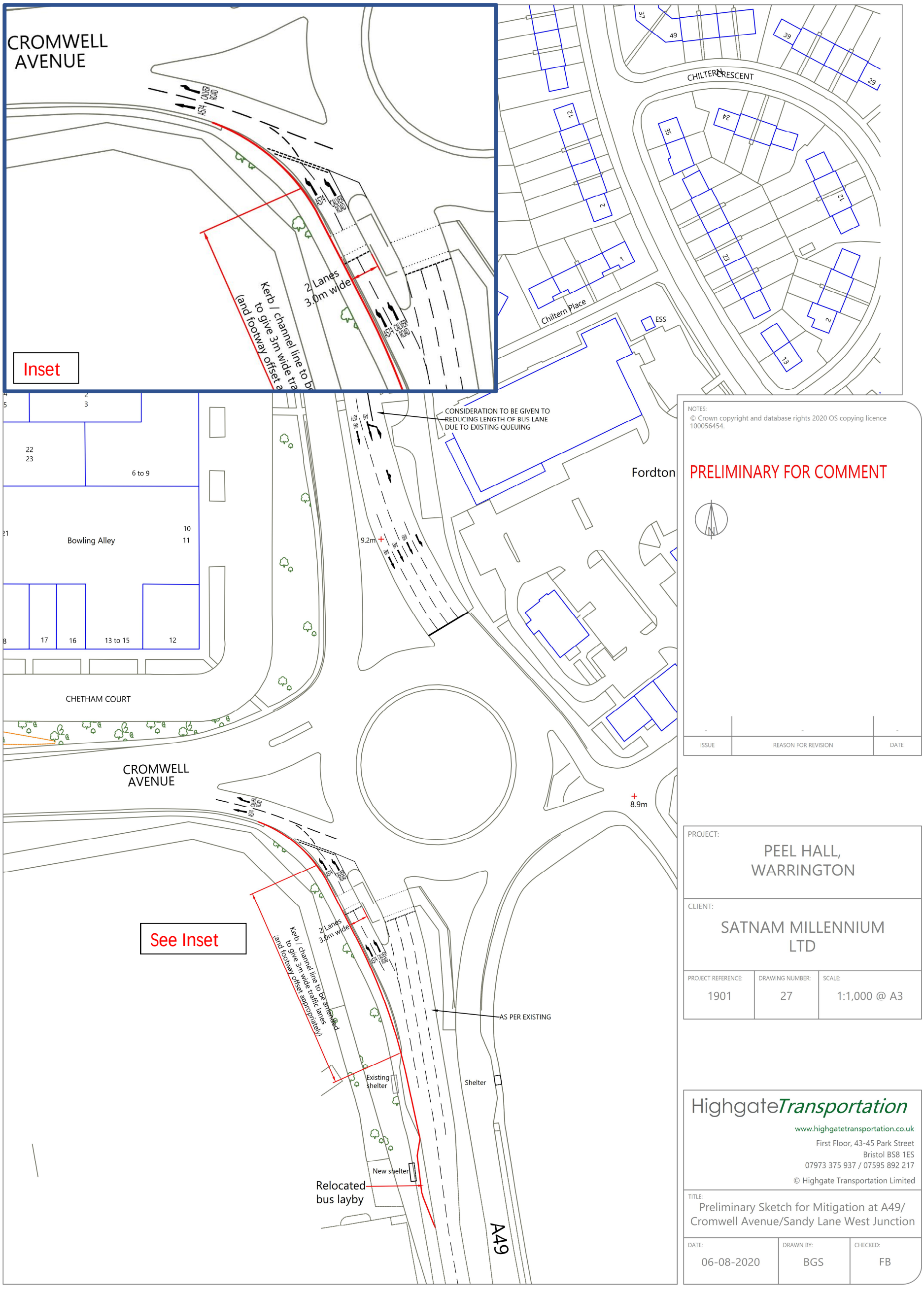
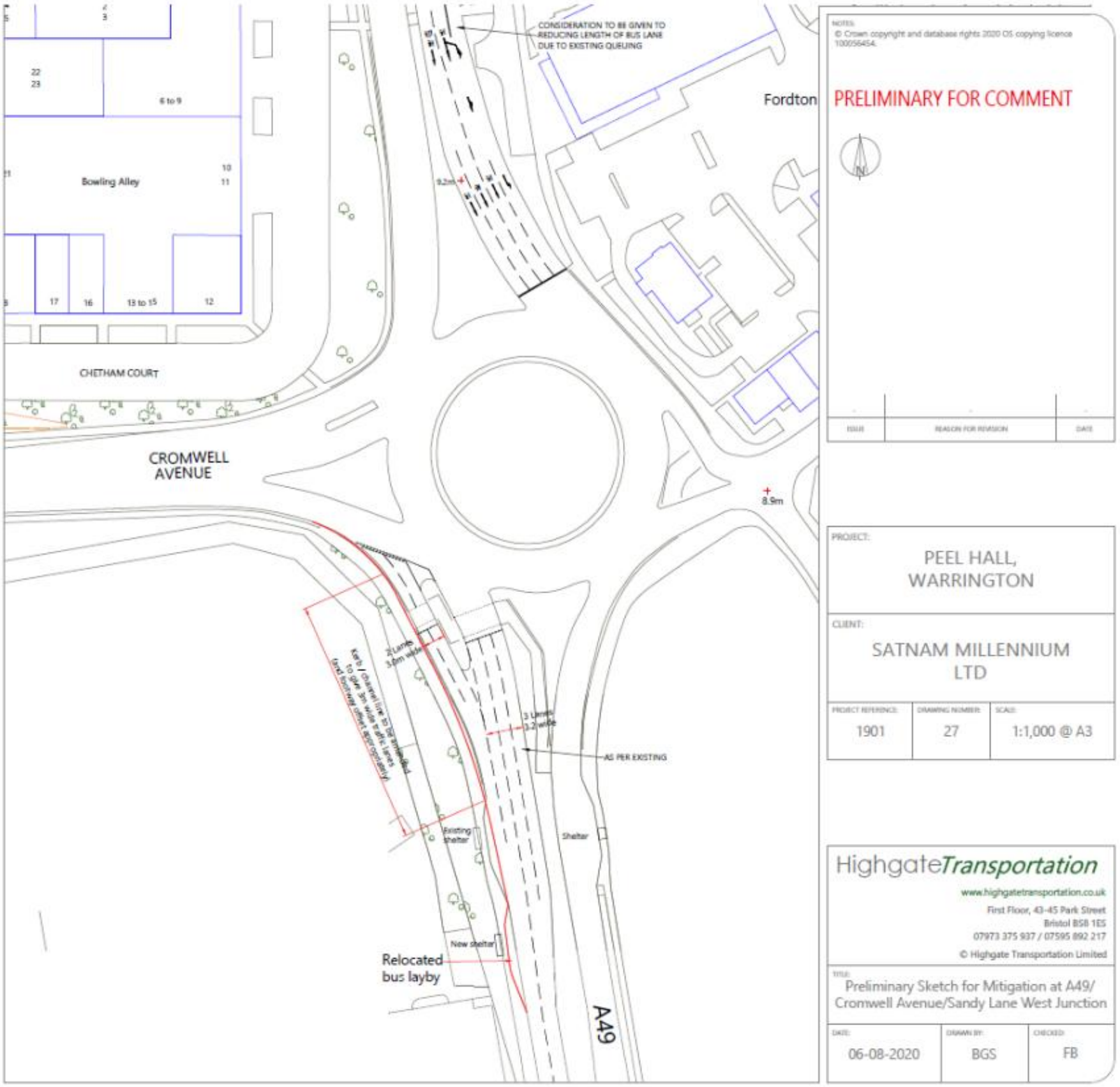


Figure GR3.14: Appellant's Proposed Mitigation at A49/Cromwell Avenue/Sandy Lane West Roundabout (contained in Access Strategy A Modelling Report)



3.5.28 This design inconsistency was raised as part of the adjourned Inquiry, as set out in the Council's Position Statement on VISSM Model dated 14th September 2020 [**CF56**], namely:

> *4. Mitigation at A49 / A574 Cromwell Avenue / Sandy Lane West*
> *A proposed mitigation scheme drawing was issued by HG on 6th August along with the August modelling package. This showed the left turn from A49 south to A574 Cromwell Avenue widened to two lanes, with the nearside lane designated for A574 and the offside lane designated for Calver Road. The modelling of this scheme, both in August and September models, allows both lanes to be used for A574 Cromwell Avenue, resulting in merging after the left turn to go ahead.……*

3.5.29 Further, this matter was raised at the VISSIM Technical Meeting held on the 24th September 2020, as set out in the minutes of that meeting dated 6th October 2020 [**CF57**], namely:

> *xi. CW* [WSP] *asked that the proposed mitigation at the A49/Cromwell Avenue arm be investigated in terms of lane designations within the model. FB* [Highgate Transportation] *agreed that this would be reviewed and a response provided.*

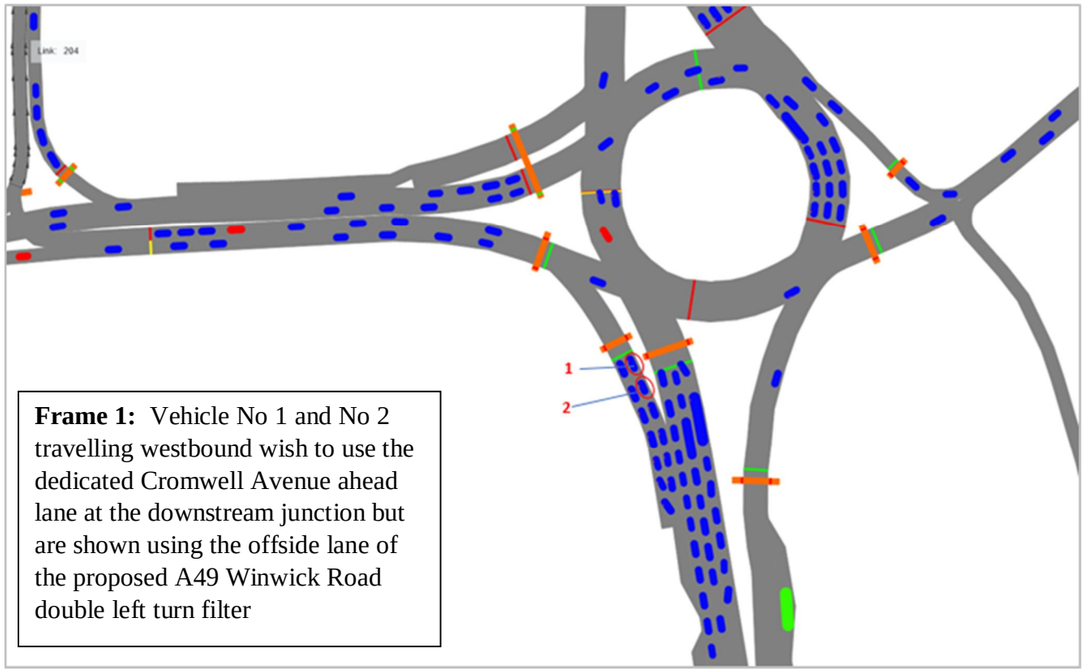
Appellant's Traffic Consultant's Final VISSIM Modelling

3.5.30 No response from Highgate Transportation was forthcoming ahead of the Final Modelling [**APP33**] issued on the 2nd December 2020.

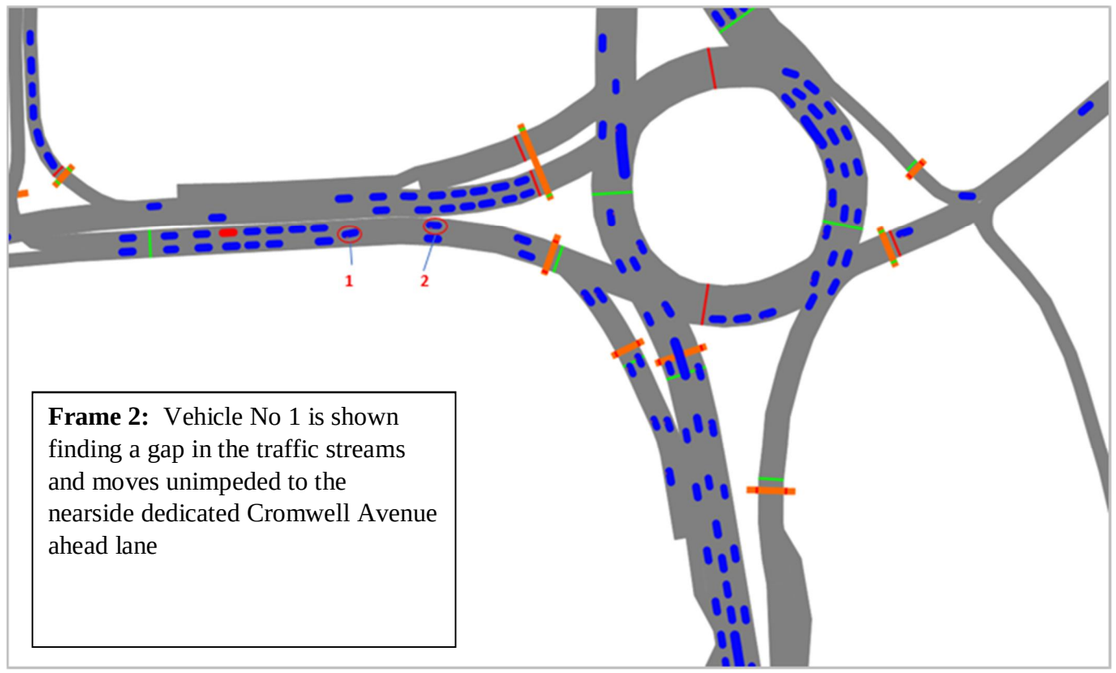
3.5.31 The final VISSIM model animation shows vehicles using the offside lane of the double left turn filter from A49 Winwick even if their destination is A574 Cromwell Avenue ahead at the next (downstream) A574 Cromwell Avenue / Calver Road signal junction. I present an example of poor lane compliance in **Figure GR3.15**.

3.5.32 Promoting use of the offside lane of the double left turn filter from A49 to A574 Cromwell Avenue in this way would increase the likelihood of vehicle conflict through undesirable merge movements on the short link between the roundabout and downstream A574 Cromwell Avenue / Calver Road signals, as well as overstating the increased capacity associated with the scheme. A non-designated lane arrangement would not be acceptable to the Council for these reasons, and would be counter to the designated lane markings on both the circulatory carriageway at this location (nearside lane A574, middle lane Calver Road, offside lane A49 / M62), and exit from the roundabout, as shown in **Figure GR3.16**.

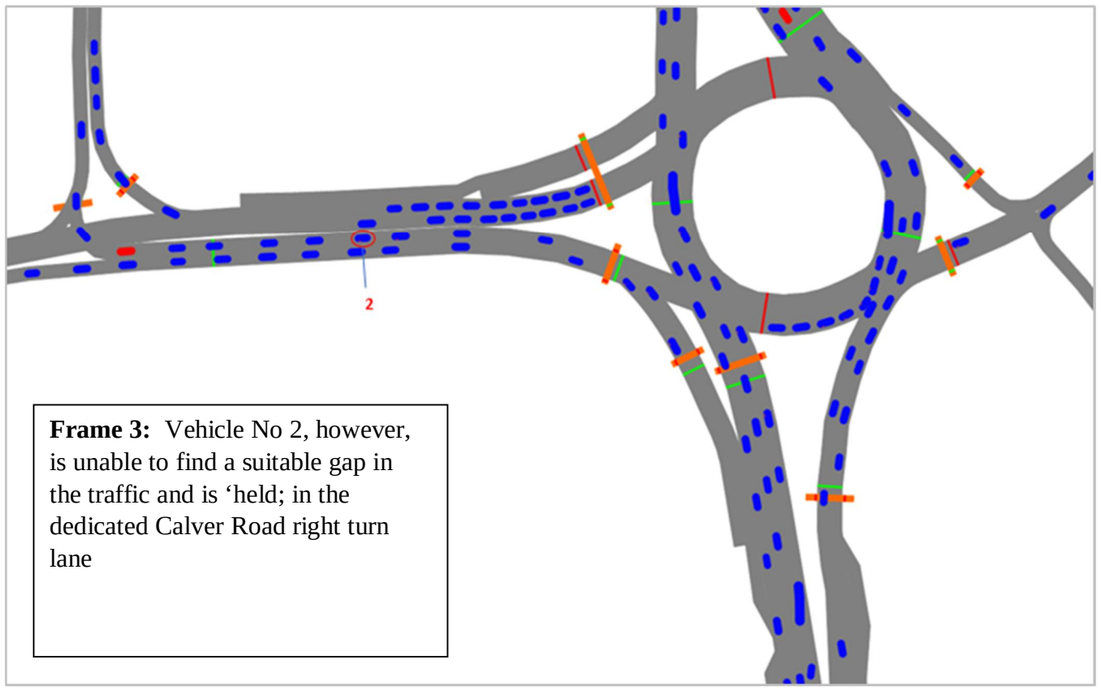
Figure GR3.15: VISSIM Model Animation – A49 Winwick Road to Cromwell Avenue Ahead (using Offside Lane of the Proposed A49 Winwick Road Double Left Turn Filter)



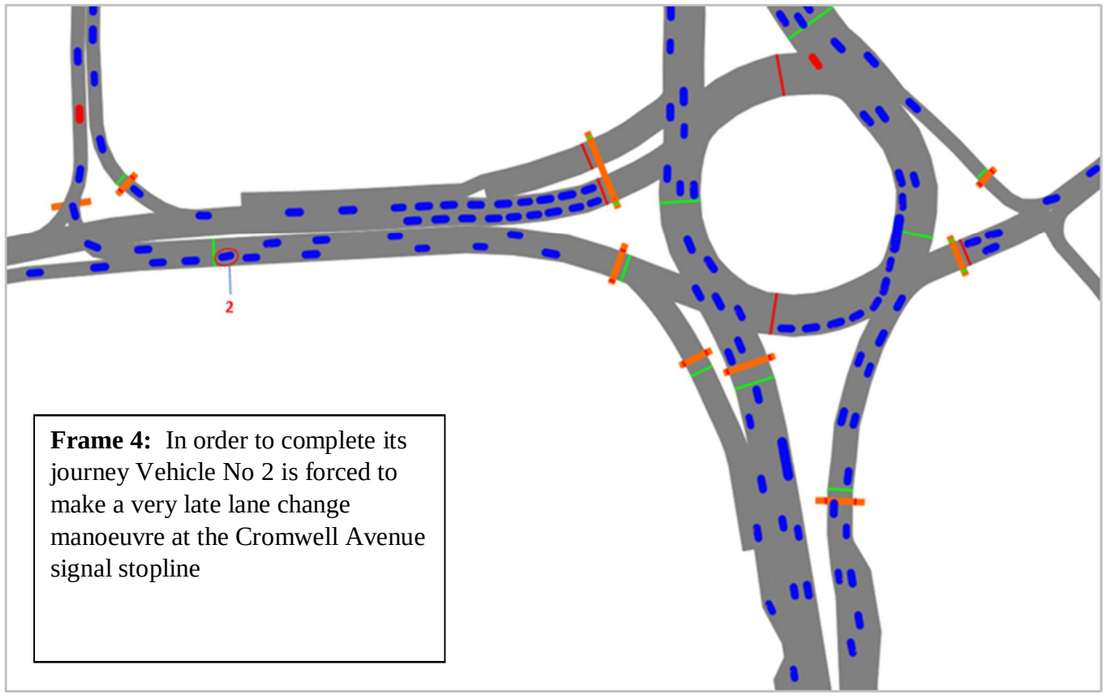
Frame 1: Vehicle No 1 and No 2 travelling westbound wish to use the dedicated Cromwell Avenue ahead lane at the downstream junction but are shown using the offside lane of the proposed A49 Winwick Road double left turn filter



Frame 2: Vehicle No 1 is shown finding a gap in the traffic streams and moves unimpeded to the nearside dedicated Cromwell Avenue ahead lane



Frame 3: Vehicle No 2, however, is unable to find a suitable gap in the traffic and is 'held; in the dedicated Calver Road right turn lane



Frame 4: In order to complete its journey Vehicle No 2 is forced to make a very late lane change manoeuvre at the Cromwell Avenue signal stopline

Figure GR3.16: Existing Lane Designations at A49/Cromwell Avenue/Sandy Lane West Roundabout

3.5.33 This matter was highlighted by WSP in its Technical Review [**APP35**] dated 8th January 2021 including the need for a Road Safety Audit and reiterated at the VISSIM review meeting held on 18th January 2021 [**APP42**].

Stage 1 Road Safety Audit

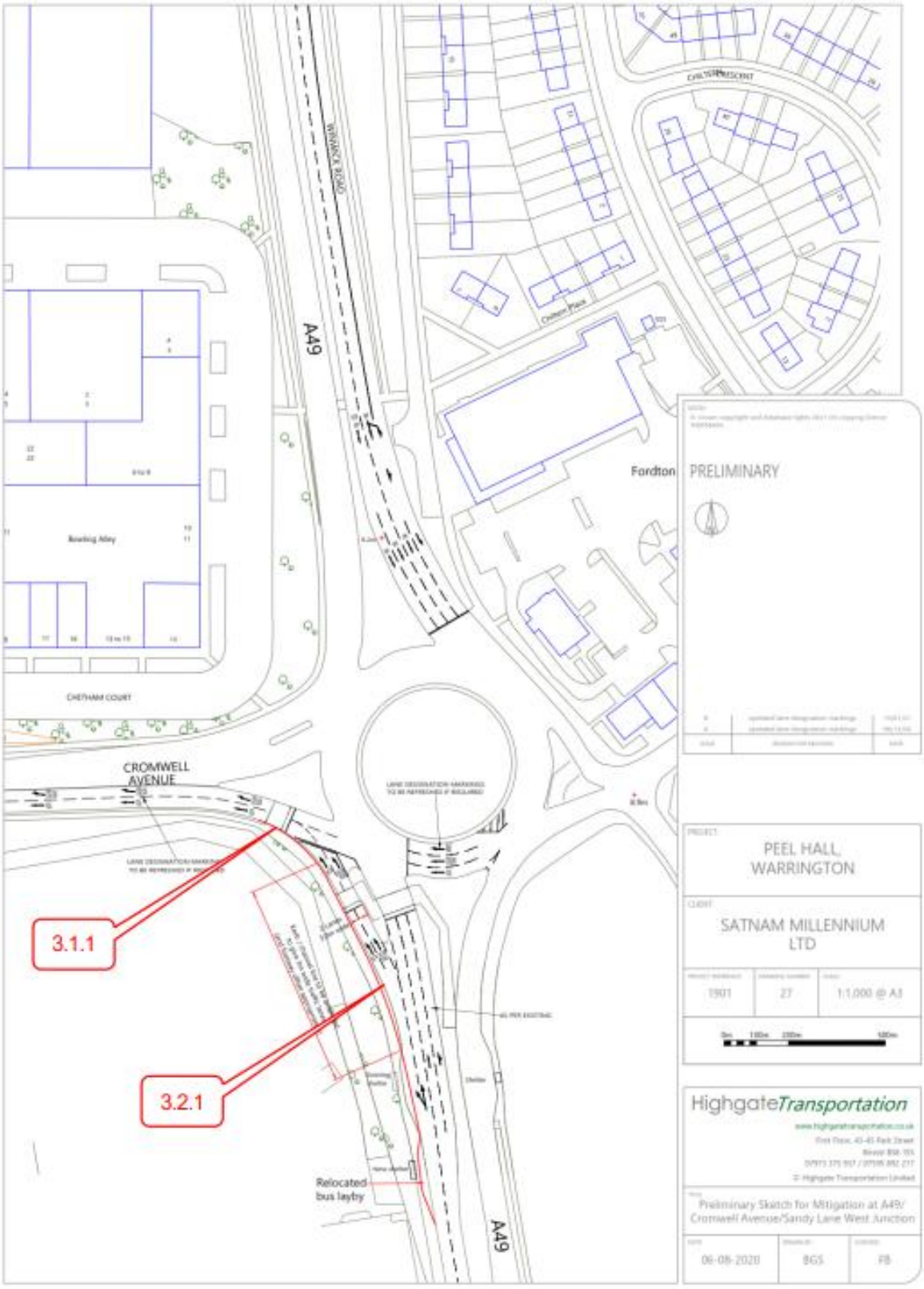
3.5.34 At the VISSIM review meeting held on 18th January 2021 [**APP42**], the Appellant's lead transport consultants agreed that an independent road safety audit should be undertaken. This was duly commissioned by Highway Transportation.

3.5.35 A copy of the Road Safety Report [**CF58**] and Designer's Response [**CF59**] were submitted to the Council on 5th February 2021. I have reproduced a copy of the design that was subject to the road safety audit in **Figure GR3.17** overleaf.

Figure GR3.17: Appellant's Proposed Mitigation at A49/Cromwell Avenue/Sandy Lane West Roundabout (Road Safety Audit – Drawing 1901/27/RevB)

APPENDIX 2: Drawing Showing Problem Locations

Problem numbers shown on the attached drawing refer to Problem numbers within the report.



3.5.36 The two problem locations referenced are set out below, along with the Designer's response:

- **3.1.1 Location:** At the Cromwell Avenue signalled crossing.

  RSA Problem: Failure to stop type collisions involving pedestrian injury. The audit team noted that drivers emerging from the left slip lane occasionally ran a red light, when the pedestrian crossing was green for vulnerable users. This occurrence may be exacerbated when the left slip is two lanes wide and when larger vehicles may obscure signal heads and pedestrians waiting on the southern footway. Red light running may lead to pedestrian to vehicle collisions.

  RSA Recommendation: It is recommended that the left slip lane is fully signalled, removing the left slip lane give way facility, incorporating the signal crossing into the junction control strategy, to remove the potential for failure to stop type collisions at the crossing.

  Design organisation response: Agreed. At detailed design stage the give-way lining at the end of the left-turn lanes where they meet Cromwell Avenue will be removed. The stop line for the pedestrian crossing on the left-turn lanes will become the fully-signalled stop line within the junction control for left-turn traffic. The VISSIM modelling has allowed for such a signal control strategy. The signalised pedestrian crossing on Cromwell Avenue (westbound) will then be incorporated into the overall junction control strategy.

- **3.2.1 Location:** At the left slip lane.

  RSA Problem: Lane change collisions on Cromwell Avenue. The provision of a two lane left slip lane may increase the likelihood of lane changes on the Cromwell Avenue link between the junction and Calver Road. Lane changes may lead to side-swipe type collisions.

  RSA Recommendation: It is recommended that vertical lane destination signing is provided to clarify lane allocations at the left slip lane.

  Design organisation response: Agreed. This will be shown at detailed design.

3.5.37 At the time of writing, the Council, in its role as Overseeing Organisation, is considering its response to the Stage 1 Road Safety Audit and Designer's Response.

VISSIM Modelling Implications

3.5.38 The proposed mitigation is evidentially at odds with the drawing layout appended to Modelling Group Final Modelling Report (**APP33** - Appendix D2) which forms the basis of their Final Modelling. Further, I am somewhat surprised that the Council were not made aware by Highgate Transportation at the VISSIM review meeting held on 18th January 2021 [**APP42**], that the drawing presented in the Modelling Group Final

Modelling Report [**APP33** – Appendix D2] had been superseded by Drawing 1901/27/RevA (dated 9th December 2020), and were not supplied with a copy of Drawing 1901/27 RevB (dated 19th January 2021 - the day following the VISSIM Review Meeting) prior to the Road Safety Audit being issued.

3.5.39 Accordingly, in absence of any updated VISSIM modelling from the Appellant's traffic modelling consultant, I have assessed the impact of implementing a properly designated lane arrangement has on network performance and present this at the end of this section of my evidence.

Technical Issue 3: Proposed Signal Optimisation Strategy at A49/Cromwell Avenue/Sandy Lane West Roundabout

Introduction

3.5.40 The matter of future year signal optimisation has been the subject of technical discussions between the Council (and their transport consultants WSP), Highways England (and their transport consultants Atkins) and the Appellant's transport consultants Highgate Transportation and Modelling Group. At the VISSIM Technical Meeting held on the 24th September 2020, Highgate Transport and Modelling Group set out their position as recorded in the minutes dated 6th October 2020 [**CF55**], namely:

> *iv c) In terms of signal optimisation, it is agreed that the principle of signal optimisation is sound. Signal optimisation arises as a result of flow changes throughout the corridor in future years leading to signal timings being adapted. The optimisation provided is to give an indication of the level of network performance; not to be prescriptive to signal engineers in the future. FB* [Fiona Bennett] *further noted that the approach has been to optimise the reference case (i.e. no development traffic) before adding the Peel Hall flows as per the agreed methodology, so as to provide a direct comparison. MG* [Modelling Group] *have not optimised for Peel Hall traffic.*

3.5.41 With regards to the application of future year signal optimisation the Access Strategy A Modelling Report [**APP33**] prepared by Modelling Group, states:

> *As a result of the level of change these committed mitigation works (ref para 2.3.1) made to flow patterns around the network, it was reasoned to be an acceptable approach to carry out signal optimisation (consisting of small, iterative changes to individual phase and stage green-times, rather than any sort of wholesale change to signal controller operation) where needed, in each future year scenario. This optimisation was carried out in the Reference Case scenarios for each future year, then all timings were kept the same in the*

Proposed Test scenarios, in order to provide a fair comparison. (Paragraph 2.3.2)

3.5.42 No further documentation was provided within the Report on which signals were altered or the rationale and logic behind the changes.

3.5.43 Examination of the signal timing contained in the future VISSIM models reveals that the main changes to be associated with:

- M62 Junction 9 signalised roundabout with the A49; and
- Sandy Lane West/Cromwell Avenue/A49 signalised roundabout.

3.5.44 At both locations, this has been achieved through green time reallocation to allow more traffic (green time) to enter the roundabout from three of the four approaches, with a corresponding green time reduction for internal circulatory lanes.

3.5.45 As a consequence, unlike current in-practice operation and base VISSIM model operation green wave progression through the junction would be impeded with an increased risk of 'junction grid-locking'. Whilst it is accepted that 'junction grid-locking' is not evident in the future year VISSIM model scenarios this remains an operational concern of the Council, as set out in Mr Rostron's evidence before this Inquiry.

M62 Junction 9 signalised roundabout with the A49 Winwick Road

3.5.46 Notwithstanding the operational concerns relating to the Appellant's traffic modelling consultants signal optimisation strategy at this location, the Council has confirmed that it is satisfied that with the recent introduction of MOVA signal control at the A49 / M62 junction 9 that the local road network would not be unduly affected by development-related traffic associated with Appeal site. Further, any variance from current signal timings, for a junction that is already operating at capacity, should be expected to be minimal, on a cycle-by-cycle basis.

3.5.47 For these reasons the Council considers that there remains a risk that the signal 'optimisation' timings, adopted by the Appellant's traffic modelling consultants, in their future year VISSIM modelling of the junction would not be replicable on the ground, with longer than predicted queues on the motorway off-slips as a consequence.

Sandy Lane West/Cromwell Avenue/A49 signalised roundabout

3.5.48 The current in-practice operation for the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout, is set out in Mr Rostron's evidence, namely:

The circulatory of the roundabout has limited queueing space so the effectiveness of the junction is very much dependent on keeping this space clear to prevent exit blocking which could result in the whole junction becoming grid locked. This is currently achieved through the use of carefully coordinated fixed time plans

referred to in section 2.2, which allow progression for the heaviest movements through each node of the junction. Termination of the approach and circulatory greens is offset to allow vehicles to clear each node in turn in order to minimise the potential for vehicles to get 'trapped' within the circulatory space. Traffic flow on Sandy Lane West approach is somewhat hindered by several 'give way' junctions (Winwick Road, Gough Avenue and Chiltern Road) along with an uncontrolled retail park entry/exit in close proximity to the junction, all acting to interrupt traffic flow, reducing the smooth or saturated flow across the stop line as vehicle 'platoons' are 'broken up'. Because of this reduced flow across the stop line, the effective green time on Sandy Lane West is limited once the initial vehicles have dispersed from the stop line. Detailed observations and site visits have shown that increasing the green time on Sandy Lane West does not significantly increase traffic flow across the stop line, but instead wastes valuable green time as vehicles arrive at the stop line much more spaced out due to the traffic flow being more 'broken up' or interrupted. It has been shown to be more effective to stop vehicles at the stop line to enable vehicles to build up again and then disperse them with a higher flow rate at the beginning of the next traffic cycle. (Paragraph 3.2)

3.5.49 The operational limitations associated with affording additional green time to Sandy Lane West are acknowledged, in part at least, in the Access Strategy A Modelling Report [**APP33**] prepared by Modelling Group, states:

On Sandy Lane West, there was a need to create a restriction in the base models in the form of reduced speeds on the entry link. This was also used in order to validate journey times for westbound traffic entering the model on Sandy Lane West. This was to model the effect of multiple side roads and a retail park where they have junctions with Sandy Lane West (data was not available to model the detail of these interactions, so the effect was modelled instead). (Paragraph 3.3.9)

However, this creates an inherent capacity constraint away from the signalised junction with the A49 Winwick Road. ***The knock-on effect of this is that, even with increased green time for the relevant stage of the signal controller, there is a limit to how much gain is available for Sandy Lane West****…* (Paragraph 3.3.10)

3.5.50 With these modelling limitations on Sandy Lane West in mind, I find it difficult to justify the level of green time change applied in the future year VISSIM model scenarios compared to the base model, where:

- In the morning peak, Sandy Lane West is allocated significantly more green time under 2027 and 2032 future year Do Minimum scenarios compared to the 2019 base model, increasing from 10 seconds of green time in the 2019 base to 14

seconds (40% more green) in 2027 and 15 seconds (50% more green) in 2032. A common signal cycle length of 48 seconds is used across all modelled scenarios.

- In the evening peak, Sandy Lane West is also allocated significantly more green time under 2027 and 2032 future year Do Minimum scenarios compared to the 2019 base model, increasing from 13 seconds of green time in the 2019 base to 20 seconds (54% more green) in 2027 and 23 seconds (77% more green) in 2032. A common signal cycle length of 70 seconds is used across all modelled scenarios.

3.5.51 Further, I am not persuaded by the Appellant's traffic modelling consultant's assertion [**APP33**] that: *"As a result of the level of change these committed mitigation works (ref para 2.3.1) made to flow patterns around the network, it was reasoned to be an acceptable approach to carry out signal optimisation"* (Paragraph 2.3.2) bears up to closer scrutiny.

3.5.52 Compared to what may reasonably be considered as major highway infrastructure (such as a new highway link or bypass) which would likely affect flow patterns on most highway networks, the committed mitigation works within the A49 corridor (shown in **Figure GR3.3**) are of a relatively limited scope:

- A49 Winwick Road/JunctionNINE Retail Park junction improvement works – the only committed highway mitigation scheme south of the M62 motorway and comprising widening of A49 Winwick Road northbound to facilitate a dedicated left turn lane into the retail park and widening of A49 Winwick Road southbound to extend the existing dedicated right turn lane into the retail park;
- A49/ Delph Lane signalised junction improvement works;
- A49/Winwick Link Road junction improvement works; and
- A49 Newton Road/ Hollins Lane junction improvement works – which is itself outside of the VISSIM model extents.

3.5.53 To this end, I present in **Table GR3.5** overleaf a comparison of the VISSIM Model changes in peak hour flows between the 2019 base and 2027 and 2032 Do Minimum scenarios at the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout.

Table GR3.5: A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout - VISSIM Model Changes in Peak Hour Flow Patterns

2019 Base Morning Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB		167	1283	277	1727
Sandy Ln W	265	0	112	236	613
A49 NB	820	73		440	1333
Cromwell Ave	278	351	574	55	1258
Grand Total	1363	591	1969	1008	4931

2019 Base Morning Peak (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	3%	26%	6%	35%
Sandy Ln W	5%	0%	2%	5%	12%
A49 NB	17%	1%	0%	9%	27%
Cromwell Ave	6%	7%	12%	1%	26%
Grand Total	28%	12%	40%	20%	100%

2027 Do Minimum Morning Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB		254	1287	286	1827
Sandy Ln W	324	0	70	305	699
A49 NB	1035	116		453	1604
Cromwell Ave	285	445	512	48	1290
Grand Total	1644	815	1869	1092	5420

2027 Do Minimum Morning Peak (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	5%	24%	5%	34%
Sandy Ln W	6%	0%	1%	6%	13%
A49 NB	19%	2%	0%	8%	30%
Cromwell Ave	5%	8%	9%	1%	24%
Grand Total	30%	15%	34%	20%	100%

Difference from Base (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	1%	-2%	0%	-1%
Sandy Ln W	1%	0%	-1%	1%	0%
A49 NB	2%	1%	0%	-1%	3%
Cromwell Ave	0%	1%	-2%	0%	-2%
Grand Total	3%	3%	-5%	0%	0%

2032 Do Minimum Morning Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB		298	1243	312	1853
Sandy Ln W	368	0	66	308	742
A49 NB	1069	139		462	1670
Cromwell Ave	283	431	501	45	1260
Grand Total	1720	868	1810	1127	5525

2032 Do Minimum Morning Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	5%	22%	6%	34%
Sandy Ln W	7%	0%	1%	6%	13%
A49 NB	19%	3%	0%	8%	30%
Cromwell Ave	5%	8%	9%	1%	23%
Grand Total	31%	16%	33%	20%	100%

Difference from Base (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	2%	-4%	0%	-1%
Sandy Ln W	1%	0%	-1%	1%	1%
A49 NB	3%	1%	0%	-1%	3%
Cromwell Ave	-1%	1%	-3%	0%	-3%
Grand Total	3%	4%	-7%	0%	0%

2019 Base Evening Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB		220	804	286	1310
Sandy Ln W	182	0	93	236	511
A49 NB	1429	114		659	2202
Cromwell Ave	377	315	529	81	1302
Grand Total	1988	649	1426	1262	5325

2019 Base Evening Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	4%	15%	5%	25%
Sandy Ln W	3%	0%	2%	4%	10%
A49 NB	27%	2%	0%	12%	41%
Cromwell Ave	7%	6%	10%	2%	24%
Grand Total	37%	12%	27%	24%	100%

2027 Do Minimum Evening Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB		320	806	313	1439
Sandy Ln W	263	0	102	272	637
A49 NB	1598	184		666	2448
Cromwell Ave	289	411	524	91	1315
Grand Total	2150	915	1432	1342	5839

2027 Do Minimum Evening Peak (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	5%	14%	5%	25%
Sandy Ln W	5%	0%	2%	5%	11%
A49 NB	27%	3%	0%	11%	42%
Cromwell Ave	5%	7%	9%	2%	23%
Grand Total	37%	16%	25%	23%	100%

Difference from Base (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	1%	-1%	0%	0%
Sandy Ln W	1%	0%	0%	0%	1%
A49 NB	1%	1%	0%	-1%	1%
Cromwell Ave	-2%	1%	-1%	0%	-2%
Grand Total	-1%	3%	-2%	-1%	0%

2032 Do Minimum Evening Peak

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB		372	818	328	1518
Sandy Ln W	291	0	102	287	680
A49 NB	1537	247		637	2421
Cromwell Ave	267	428	526	80	1301
Grand Total	2095	1047	1446	1332	5920

2032 Do Minimum Evening Peak (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	6%	14%	6%	26%
Sandy Ln W	5%	0%	2%	5%	11%
A49 NB	26%	4%	0%	11%	41%
Cromwell Ave	5%	7%	9%	1%	22%
Grand Total	35%	18%	24%	23%	100%

Difference from Base (Turning Proportions)

Arm	A49 SB	Sandy Ln W	A49 NB	Cromwell Ave	Grand Total
A49 SB	0%	2%	-1%	0%	1%
Sandy Ln W	1%	0%	0%	0%	2%
A49 NB	-1%	2%	0%	-2%	0%
Cromwell Ave	-3%	1%	-1%	0%	-2%
Grand Total	-2%	5%	-2%	-1%	0%

3.5.54 Whilst traffic growth at the junction is to be expected, **Table GR3.5** shows minimal changes in turning proportions at the junction across modelled scenarios. By way of illustration:

- Sandy Lane West is shown to contribute 12% of the total inflow of traffic into the junction at 2019 base year in the morning peak, this is predicted to remain almost unchanged at 13% in both 2027 and 2032 Do Minimum scenarios. The change in turning proportion for any one movement from Sandy Lane West lies within a range of -1% to +1%; and
- Sandy Lane West is shown to contribute 10% of the total inflow of traffic into the junction at 2019 base year in the evening peak, this is predicted to remain almost unchanged at 10% in both 2027 and 2032 Do Minimum scenarios. The change in turning proportion for any one movement from Sandy Lane West lies within a range of 0% to +1%.

3.5.55 This raises two issues:

- How would the Base VISSIM model perform if it were to adopt the 'optimised' signal timings at the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout?
- How would the 2027 and 2032 Do Something (with Peel Hall and full proposed mitigation) VISSIM model perform if we were to revert to 2019 Base model signal timings with a relatively minor adjustment to account for the proposed double left turn filter from A49 to Cromwell Avenue, replicating the Appellant's traffic modelling consultant's green time changes from their Do Minimum?

3.5.56 I have assessed the impact that these two issues have on network performance and present this in the next section of my evidence.

Assessment of Technical Issues on Predicted Model Outcomes

3.5.57 I present in this section of my evidence the individual impacts that the following technical concerns would have on network performance, namely;

- **Base Test #1:** 2019 Base model operation using 'optimised' 2022 Do Minimum signal timings at the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout, presented in **Figure GR 3.18**;
- **Future DS (Peel Hall plus full proposed mitigation) Test #1:** Signal timing change which reverts the signal timings at the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout to 2019 Base model operation with an adjustment made to account for the proposed double left turn filter from A49 to Cromwell Avenue, presented in **Figures GR 3.19 and GR3.20**;
- **Future DS (Peel Hall plus full proposed mitigation) Test #2 (evening peak only):** Flow demand change to account for a shortfall in trips in the evening peak

between JunctionNINE Retail Park (Zone D) and Sandy Lane West / Cleveland Road / Poplars Avenue (Zone G), presented in **Figures GR 3.19 and GR3.20**; and

- **Future DS (Peel Hall plus full proposed mitigation) Test #3:** Network coding change to reflect designated lane markings on the proposed double left turn filter from A49 Winwick Road to A574 Cromwell Avenue i.e. nearside lane Cromwell Avenue ahead only, offside lane Calver Road only, presented in **Figures GR 3.19 and GR3.20**.

3.5.58 The predicted queue lengths from these additional VISSIM model runs show:

- Marked operational improvement at the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout under 2019 base year conditions through adoption of the Appellant's traffic modelling consultant's 'optimised' signal timing from their 2022 Do Minimum scenario, with negligible queueing on Sandy Lane West in both peak periods and significant reductions in predicted queue lengths on the A49 Winwick Road southbound in the morning peak and A49 Winwick Road northbound in the evening peak. Signal engineer, Mr Rostron's evidence, on behalf of the Council, confirms that the signal timings are currently running at optimal settings for a junction already operating at capacity.;
- Conversely reverting to base year signal timings in future Do Something (with Peel Hall and proposed full mitigation) scenarios, with minor adjustment to reflect the proposed double left turn filter from A49 Winwick Road to Cromwell Avenue, is predicted to lead to a significant worsening in queueing and blocking back, most notably to Sandy Lane West;
- Appropriately accounting for a shortfall in trips in the evening peak between JunctionNINE Retail Park (Zone D) and Sandy Lane West / Cleveland Road / Poplars Avenue (Zone G) is predicted to give rise to accelerated blocking back on Sandy Lane West, and significant increased queue lengths on A49 Winwick Road in both directions; and
- Amending the VISSIM network coding to reflect designated lane markings on the proposed double left turn filter from A49 Winwick Road to A574 Cromwell Avenue i.e. nearside lane Cromwell Avenue ahead only, offside lane Calver Road only, is predicted to lead to increased queueing on the A49 Winwick Road northbound in the evening peak.

3.5.59 Further, I would caution that when considering queue lengths on the A49 Winwick Road northbound approach under 2032 evening peak conditions, for the reasons discussed early in my evidence, namely, the very significant levels of latent demand (trips stuck or stored outside of the network) has the effect of 'throttling traffic demand' at this location.

Figure GR3.18: 2019 Base Year Predicted VISSIM Model Queue Lengths at A49/Cromwell Avenue/Sandy Lane West Roundabout

Figure GR3.19: 2027 Predicted Do Something (Peel Hall plus full proposed mitigation) VISSIM Model Queue Lengths at A49/Cromwell Avenue/Sandy Lane West Roundabout

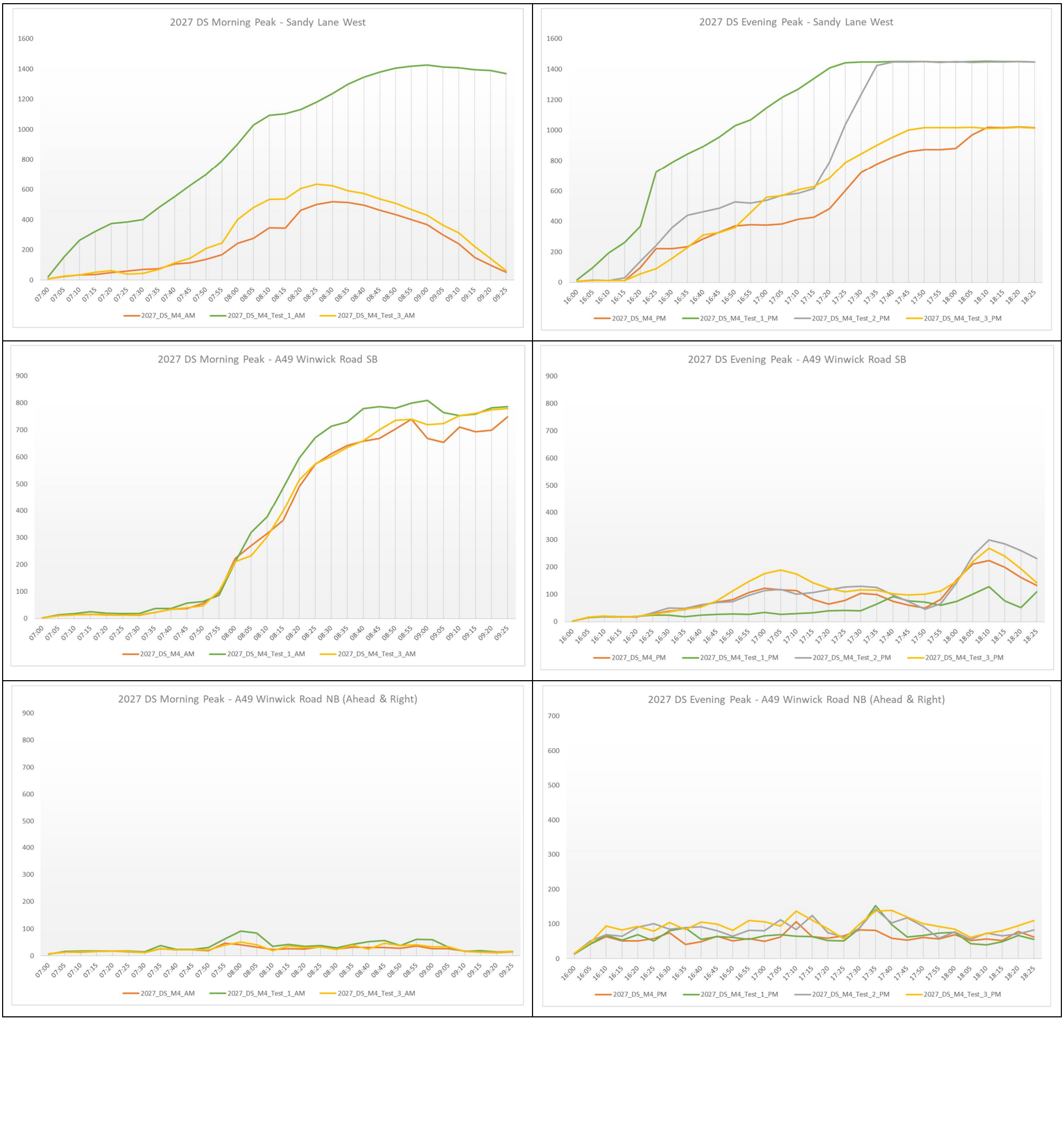


Figure GR3.20: 2032 Predicted Do Something (Peel Hall plus full proposed mitigation) VISSIM Model Queue Lengths at A49/Cromwell Avenue/Sandy Lane West Roundabout

4. Summary and Conclusions

4.1.1 Through a proper interpretation of the outputs from the A49 Corridor VISSIM modelling undertaken by the Appellant's traffic modelling consultant Modelling Group I have demonstrated:

- a network that is not capable of accommodating development-related traffic on to the Sandy Lane West approach to the Sandy Lane West/Cromwell Avenue/A49 signalised roundabout, despite extending the link to encompass the full length of Cleveland Road and a significant length of Poplars Avenue as far as the furthermost junction with Windermere Avenue; and
- queuing traffic on Sandy Lane West to markedly worsen in 2027 and 2032 across both peak periods, especially in the 2032 evening peak period with rapid progression of queues extending back to the network limits of the model by 5.20 pm, at distance of some 1.4 km (equivalent to circa 160 stationary or slow moving vehicles), with no evidence of blocking back receding before the end of the modelled evening peak period at 6.30 pm i.e. conditions continuing to worsen in to the shoulders of the evening peak period, despite demand falling.

4.1.2 In reality, any queue on Sandy Lane West that extends back beyond 300 metres to the roundabout would affect both Cotswold Road (from the north) and Sandy Lane (from the south-east) in addition to Cleveland Road (from the north-east), compounding network operation issues in the surrounding 'Poplars' residential area.

4.1.3 On this evidence I cannot agree with the Appellant's traffic modelling consultant's summary conclusion in the Report [**APP 33**] that:

> *"When Peel Hall development traffic is added to the network, there is an impact on levels of congestion, however, the addition of the full M4 mitigation package clearly improves upon or resolves many of the congestions contributing factors."* (Paragraph 4.2.3)

4.1.4 Further, I have shown through an assessment of a series of technical concerns outstanding with the A49 Cordon VISSIM Model future that:

- If the Appellant's traffic modelling consultant's 'optimised' signal timing from their 2022 Do Minimum scenario were applied to their validated 2019 base year model, this would markedly improve the operation of the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout – which is not a credible outcome given signal engineer, Mr Rostron's evidence, on behalf of the Council, which confirms that the signal timings are currently running at optimal settings for a junction already operating at capacity.
- Reverting to base year signal timings in future Do Something (with Peel Hall and proposed full mitigation) scenarios, with minor adjustment to reflect the proposed

double left turn filter from A49 Winwick Road to Cromwell Avenue, on the basis of the aforementioned finding and without any evidence to show that flow patterns area predicted to change measurably; would significantly worsen queueing and blocking back at the A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West roundabout, most notably to Sandy Lane West;

- Appropriately accounting for a shortfall in trips in the evening peak between JunctionNINE Retail Park (Zone D) and Sandy Lane West / Cleveland Road / Poplars Avenue (Zone G) is predicted to give rise to accelerated blocking back on Sandy Lane West, and significant increased queue lengths on A49 Winwick Road in both directions,
- Amending the VISSIM network coding to reflect designated lane markings on the proposed double left turn filter from A49 Winwick Road to A574 Cromwell Avenue i.e. nearside lane Cromwell Avenue ahead only, offside lane Calver Road only, is predicted to lead to increased queueing on the A49 Winwick Road northbound in the evening peak.

4.1.5 Accordingly, the only conclusion that I am able to draw is that in operational terms Sandy Lane West / Cleveland Road / Poplars Avenue is not an appropriate access route to serve this Appeal Site; given the existing demands placed upon it – which is covered in Mr Taylor's evidence, on behalf of the Council, before this Inquiry.

4.1.6 With respect to the impact of development-traffic associated with Appeal site at other junction locations along the A49 corridor, the Council has taken what I consider to be a pragmatic and measured position with regards to development impact, insofar as:

- The Appellant's traffic modelling consultant's own VISSIM model predicts very significant worsening of conditions on A50 Long Lane in the morning peak period, significant worsening of conditions on all approaches to the A49/A50/Hawley's Lane signal junction in the evening peak period – with a substantial amount of traffic stuck or store outside of the network. Notwithstanding, the Council acknowledge that development-related traffic associated with the Appeal Site at the A49/A50/Hawley's Lane signal junction does have some potential for alternative routeing to complete their journeys, which in combination with a MOVA signal upgrade of the junction may moderate the impact at this location; and
- Notwithstanding the operational concerns relating to the Appellant's traffic modelling consultants signal optimisation strategy at A49 Winwick Road / M62 Junction 9, the Council acknowledge the relatively modest levels of development-related traffic at this location, and as such is satisfied that with the recent introduction of MOVA signal control at the A49 / M62 junction 9 that the local road network would not be unduly affected.