

## Appendix DT/23

VISSIM Correspondence

**From:** Heywood, Robert <Robert.Heywood@highwaysengland.co.uk>  
**Sent:** 03 August 2020 09:15  
**To:** Fiona Bennett  
**Cc:** 'Dave Tighe'; Taylor, Mike; Luke Best; Chris; Lu, Tao; Wright, Colin; Gavin.Coupe; Pendergast, John; Laverick, Benjamin  
**Subject:** RE: Peel Hall - VISSIM  
**Attachments:** 5188540.066 Peel Hall Base Vissim and future year scenarios Review v1.pdf

Fiona,

Please find attached the Atkins review completed by Gavin.

In summary the Base Vissim Model is found as fit for purpose but the Matrix Conversion Spreadsheet not so.

### **Base Vissim Model**

The base Vissim model has been found to be of a reasonable standard along the main study corridor. The base model can be recommended as being fit-for-purpose in the area of interest to Highways England with the caveat that caution should be applied to results for the Westbound Off-slip in both peak periods and the Eastbound Off-Slip in the Evening Peak.

### **Matrix Conversion Spreadsheet**

The supplied matrix conversion spreadsheet has been reviewed and is thought to not be fit for purpose. Firstly, the labelling of the tabs and explanation of the steps taken are not sufficiently clear that the work can be accurately reviewed. Secondly, the approach to the work appears to include models with different geographical coverage which adds complexity apparently unnecessarily. Thirdly, when reviewing the base matrices to the base Vissim model, the flows don't appear to match. And finally, when attempting to follow the steps through to future year matrices, Atkins was unable to follow the work as set out.

Kind regards,

Rob

### **Robert Heywood, Route Manager**

Network Development & Planning Team

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**Subject:** RE: Peel Hall - VISSIM

Hi Fiona,

Thank you for your response. I have followed up below on points 2 and 3:

2 – We understand the operation of the spreadsheet and what it presents. Please could you advise when the final input forecast flows for Vissim will be provided for review and agreement.

3 – What is the purpose of the matrices named DEV\_20##\_DS\_Full\_Dev\_ if there is no matrix stacking? From the call on the 10<sup>th</sup> July previously, our understanding was that Peel Hall development traffic would be loaded as absolute values into the model.

If it would help to have a call between Modelling Group, WSP and potentially Atkins to discuss further and hopefully bottom this out then please do advise of availability.

Regards,

John

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Principal Transport Planner



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**From:** Fiona Bennett <[fiona.bennett@highgatetransportation.co.uk](mailto:fiona.bennett@highgatetransportation.co.uk)>

**Sent:** 29 July 2020 14:26

**To:** Pendergast, John <[John.Pendergast@wsp.com](mailto:John.Pendergast@wsp.com)>

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**Subject:** Re: Peel Hall - VISSIM

Afternoon John,

As set out previously, it is not clear why the 5min queue length data is required when the model is validated against journey times and delay.

In terms of question 2, Modelling Group have explained that they kept the spreadsheet as dynamic as possible so that we were not duplicating calculations – as for each scenario the calculations are the same. The inputs and routes for the VISSIM model are found in the AM\_forVissim and PM\_forVissim tabs respectively. In order to change the data, the scenario needs to be selected using the MatrixDiffs\_AM and PM tabs in cell E24.

In terms of question 3, the scenarios listed in V2-12 on the MatricDiffs tabs refer to the data for each scenario as taken from the Saturn outputs. I think you made reference to them in your email I attached. The scenario is then available from selection in cell E24. There is no stacking.

Happy to discuss.

Kind regards,  
Fiona

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Date: Tuesday, 28 July 2020 at 09:32

To: Fiona Bennett <[fiona.bennett@highgatetransportation.co.uk](mailto:fiona.bennett@highgatetransportation.co.uk)>

Cc: 'Dave Tighe' <[dave.tighe@highgatetransportation.co.uk](mailto:dave.tighe@highgatetransportation.co.uk)>, "Heywood, Robert"

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Subject: RE: Peel Hall - VISSIM

Hi Fiona and Chris,

Thank you for your response. I have responded below using the same numbering conventions as my original e-mail:

1. Regarding the queue data, if this is not something you will provide at this point we will run the model to extract the queues ourselves, this will take more time in the review of the base model.
2. I will re-word the question, is the final complete table of demand routing for Vissim presented, as it will be entered into the model, in the spreadsheet. If it is please could you clarify where?
3. I cannot see a response to this in your e-mail below. Please could it be clearly set out what each of the matrices named in V2-12 of the "Matrix\_Diffs\_" tab are.

If you could advise on points 2 and 3 please.

Regards,

John

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Principal Transport Planner



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**Cc:** 'Dave Tighe' <[dave.tighe@highgatetransportation.co.uk](mailto:dave.tighe@highgatetransportation.co.uk)>; Heywood, Robert <[Robert.Heywood@highwaysengland.co.uk](mailto:Robert.Heywood@highwaysengland.co.uk)>; Taylor, Mike <[mike.taylor@warrington.gov.uk](mailto:mike.taylor@warrington.gov.uk)>; Luke Best <[luke@modelling.group](mailto:luke@modelling.group)>; Chris <[chris@modelling.group](mailto:chris@modelling.group)>; Lu, Tao <[Tao.Lu@wsp.com](mailto:Tao.Lu@wsp.com)>; Wright, Colin <[Colin.Wright@wsp.com](mailto:Colin.Wright@wsp.com)>; Coupe, Gavin D <[Gavin.Coupe@atkinsglobal.com](mailto:Gavin.Coupe@atkinsglobal.com)>  
**Subject:** RE: Peel Hall - VISSIM

Afternoon John,

Thank you for your email.

In terms of the queue data, you will appreciate that the Basemap data (which suggests hourly queue lengths) provided as part of the audit has been referenced within the model, along with previous references to Google Traffic. However, given that there is not a relevant source of detailed queue data to match the other data used when updating the base model, and that queue data is not generally considered as a stand-alone element for formal validation, it doesn't seem necessary/relevant to include queue data as proof of validation in the LMVR. Furthermore, the anecdotal evidence put forward from the Council has also been considered, but this is also not something that we can validate against. Hence queue information is not included for within the LMVR, but we do have a note to provide this additional information once all future years have been run.

Given that the model validation is for journey times and delay, we are happy to rely on these going forwards for reporting development impact. However, we do consider that the use of queues for reporting impact remains relevant given that it is a like-for-like comparison between Do Minimum and Do Something scenarios.

You will appreciate that we have to draw a line around now to enable us to submit evidence on time.

After submission of evidence we will take the opportunity to review additional requests and provide an update at the inquiry.

Details have been provided below from Chris at Modelling Group on how the spreadsheet calculates the future demand, as follows:

*Base Inputs and Base Routes pasted into the spreadsheet.*

*Base Inputs*

1. *Each input is assigned to an OD zone. Each input is then allocated a percentage of the total zonal input based upon the base dataset.*

*Eg. If there are 4 inputs in the base all assigned to zone A which has a total flow of 100. Input 1 is 25, 2 is 25, 3 is 0 and 4 is 50 then the inputs are assigned a 25%, 25%, 0% and 50% split.*

- 2. The routes are assigned to the zone origins and destinations. The route totals are compared to the input totals and a proportion for each od pair is assigned from each input.*
- 3. Now, for every time step the routes are translated into an OD matrix for the CARS, LGVS and HGVS. A percentage split is calculated for both the CARS and LGVS – so if the OD pair combined totals 100, with the cars equalling 50 and the lgvs equalling 50 then each type has a 50% split.*

*The Saturn difference matrices are calculated.*

- 4. The SATURN base matrix is compared to the SATURN scenario matrices. This provides a ABS difference matrix and a PERC difference matrix.*

*The VISSIM base model routes are then processed using this data.*

*For each route, for ABS difference:*

*The existing flow is added to the ABS difference SATURN flow for each OD pair. If the vehicle class is CAR or LGV the new flow is factored by the vehicle proportion.(3). This value is then factored by the original route to input split. (4) This uplifts the flow for OD pairs which were available in the base. For OD pairs that did not occur in the base, the ABS flow is added to these zones again using a proportion based on the number of routes per zone. Eg. In some cases there are say 4 routes between an OD pair. As it is an unknown, all 4 routes take an equal share of the new flow. Where the ABS difference is a negative and takes the VISSIM routing flow below 0 we fix the minimum value to 0.1 ensures that each vehicle in VISSIM is assigned to a route.*

*For each route, for PERC difference:*

*The existing flow is multiplied by the PERC difference SATURN flor for each OD pair. For OD pairs that did not occur in the base, percentage factors do not work. The ABS flow is used here.*

*Where the flow change is wildly difference between the PERC and ABS, we have used the ABS value. This is prevalent for OD paid – M to O.*

*The inputs for the future scenario are then calculated using the total flows from each OD pair and assigned to the correct input.*

Any further questions on the spreadsheets specifically please do contact Chris for a quick chat:



**CHRIS DAVIS**  
Director | Modelling Specialist  
Tel: 07458 301436  
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We are looking to issue the complete modelling package next week.

I trust that the above is helpful – happy to discuss.

Kind regards,  
Fiona

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**Subject:** RE: Peel Hall - VISSIM

Hi Fiona, Chris and Luke,

Thank you for providing this package of information. We have undertaken an initial review, which has raised some points as set out below. We have responded as quickly as possible because we understand the timescales for this are now pressing and therefore a prompt response on the below would be beneficial.

1. The LMVR shows traffic count and journey time route results (including the new local road routes). However, it would be beneficial to see base queue lengths reported in the LMVR, in five minute intervals, for the peak hour and cool down. Due to the reporting of the impacts we have seen to date relying quite heavily on queue lengths to show development impact. Plus queues have served as an important sense check on local road routes previously. This will also save use needing to re-run the model for results to extract the queue lengths ourselves, bringing the benefit of speeding up the review.
2. Regarding the forecasting, there appears to be some more explanation on the front sheet to explain slightly more about how the sheet works. Plus now a comparison has been added of Absolute and Percentage difference back to the Vissim base. We note the text on row 40 of the "USAGE" tab: "Standard practice would suggest the use of the PERCENTAGE DIFFERENCE however there is an option to use the ABS difference. This will be discussed in further technical documentation." This final step and the narrative around it is quite important because it will allow us to check the final demand proposal. I suggest that we will pause our review of this until the additional information has been provided because otherwise we will have to review both methods and any significant differences back to the base.
3. I have attached the e-mail where the SATURN scenarios are explained. There are more scenarios than this in the matrix building spreadsheet. Please could it be clearly set out what each of the matrices named in V2-12 of the "Matrix\_Diffs\_" tab are. Plus if these will be used in individual scenarios or combined in any cases as stacked matrices?

Regards,

John

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Principal Transport Planner



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**From:** Fiona Bennett <[fiona.bennett@highgatetransportation.co.uk](mailto:fiona.bennett@highgatetransportation.co.uk)>

**Sent:** 20 July 2020 15:50

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**Subject:** Re: Peel Hall - VISSIM

Good afternoon All,

Please find below the download link for the Peel Hall updated and validated VISSIM base model with:

- i. updated LMVR
- ii. updated methodology spreadsheet
- iii. model scenarios including resultant vehicle matrices

Please see link for download:

<https://modellinggroup.sharepoint.com/:u:/g/EbDW6e0y3xIFv3NB-d31vvkB7ol-GAbLlxtTIWydBYBgKQ?e=G19suY>

Happy to discuss

Kind regards,  
Fiona

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Our reference: 5188540.057

Your reference: NW022 20/21

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31 July 2020

Dear Rob

## **Re: Review of Peel Hall Modelling Information**

Atkins has been commissioned by Highways England to audit a base VISSIM model and supporting Local Model Validation Report (LMVR) which has been produced by the Modelling Group on behalf of Highgate Transportation (HT) who have been commissioned by Satnam Millennium Ltd (Satnam) in support of the proposed development of land at Peel Hall in Warrington. Further, Atkins have been commissioned to review spreadsheet work related to the conversion of future year flows from a SATURN model for use in the Vissim model so that scenarios can be created.

The relevant Planning Authority for this submission is Warrington Borough Council (WBC)

## **Background**

As you are aware, there is a long planning history to this project and we have provided several reviews in the past as well as providing supporting information to the 2018 Public Inquiry (LPA reference: 2016/28492, PINS reference: APP/M0655/W/17/3178530).

The latest document reviews include:

- A review of a submitted Addendum to the previously submitted Transport Assessment (HTp/1107/01/A dated January 2018), in support of the proposals for a new residential neighbourhood on land at Peel Hall to be considered at a forthcoming reopened Public Inquiry. This review was issued on 15th April 2020 and included a further review of the Vissim modelling.
- A review of a submitted documents that make up part of a second Addendum to the Environmental Statement (ES Addendum 2). The following documents (in PDF) were reviewed in a letter issued on 5<sup>th</sup> June 2020:
  - 1820\_Peel Hall- ES Non-Technical Summary- Volume 7
  - 1820\_Peel Hall- Environmental Statement ADDENDUM 2 - Volume 8- 2020
  - 1820\_Peel Hall- ES Documents and Figures- Volume 9- Part 1 and 2- 02.04.20
- A review of a submitted base VISSIM model and supporting Local Model Validation Report (LMVR). This review was issued on 5<sup>th</sup> June 2020.

## **Submitted Documentation**

HT have submitted information in two batches. However, as the latter supersedes the former, only the latter is to be reviewed. The submitted documents in the latter batch are listed below:

- Vissim model '2019AuditedBase' with associated documentation including a revised LMVR submitted as 'MG0123\_A49WarringCorridor\_BaseModellingReport\_v4', and
- Spreadsheet 'MG0123\_Linsig\_to\_VISSIM\_MatrixConversion-inc-SATURN-VISSIM\_FY\_v3' with associated zoning information.

The above documents are reviewed under the following sub-headings.

### Peel Hall Vissim Model – Base Model Review

It should be noted at the outset that, as with previous reviews, this review focuses on the parts of the network that are of interest to Highways England. As such, it cannot be said that Highways England agrees or disagrees with any part of the work that does not fall under that heading.

It was noted in the review of 5<sup>th</sup> June that The Modelling Group appeared to have addressed the model audit comments raised in our review (ref 5188540.047) issued on the 7th February 2020 and Review of Transport Assessment Addendum Report (ref 5188540.053) issued on the 14th April 2020. It was further noted that there were improvements with regards to both the traffic count and journey time validation.

However, as WSP, on behalf of WBC, made several representations with regards to issues with the Vissim model mainly at the southern end of the network and therefore at the far end of the model from the area of interest to Highways England. As such, it is not necessarily a juxtaposition that Atkins were happy with the modelling and WSP not as the focus of our reviews was different.

Subsequent to the above reviews, TMG have issued revised Vissim modelling which is reviewed in the table below. The table is set out in the same format as in our previous review for ease of reading.

| Review Criteria                 | Comments  |
|---------------------------------|---|
| Basic Model Coding              | The basic model coding is consistent with the previous modelling and is deemed to be generally appropriate in the area of interest to Highways England  |
| Use of Modifications            | The updated approach for scenario management within Vissim is deemed appropriate (note that this applies to the review of the base model only)  |
| Method of Assignment            | It is noted TMG have removed the now unused coding for Dynamic Assignment. This has 'tidied' up the model and is a welcome simplification.  |
| Temporal Scope                  | The temporal scope has always been deemed appropriate   |
| Network Layout Coding           | The network coding for the base model is now deemed to be generally appropriate   |
| Driving Behaviour Parameters    | The Driving Behaviour Parameters were updated as recommended for the previous review. It continues to be the case that this provides for more accurate and robust <u>basis</u> for the assessment.  |
| Traffic Functions Setting       | All HGV acceleration and deceleration functions were updated as recommended for the previous review to match current default settings found within VISSIM version 2020. It continues to be the case that this provides for more accurate and robust <u>basis</u> for the assessment.  |
| Signals                         | It was understood as part of the previous review that traffic signal timings for M62 J9 were acquired from Warrington Borough Council and were incorporated in the base model. However, the LMVR appears to suggest that operational timings are not available for use in the model and clarification is requested for the avoidance of doubt.  |
| Speed Distributions / Decisions | Speed distributions and decisions are deemed to be broadly appropriate.   |
| Calibration to Counts           | The LMVR reports 100% of model flows are within a GEH value of less than 5 which is therefore within the TAG threshold albeit it is noted that TAG was not designed for micro models.<br><br>Whilst it is noted that this is an improvement on the original modelling thus ratifying our comments which have assisted The Modelling Group with the model improvements, it should also be noted that a high level of link count matching does not necessarily mean that the model matches turns at key junctions such as M62 J9. |
| Validation to Journey Times     | It is noted that the number of route sections that the model is validated against has been increased by TMG. This is welcomed particularly as there are now   |

|                             |  |
|-----------------------------|--|
|                             | <p>additional segments on and around M62 J9 which Atkins had previously asked for.</p> <p>The key segments in the tables are therefore 3,4,5 (Northbound and southbound through M62 J) and 11, 13 (The slip roads from M62 to J9).</p> <p>It is noted that all of the Northbound and Southbound route sections are within 15% of the observed values for both peak periods. Whilst some of the values are at the higher end, the values as a whole appear to be generally representative.</p> <p>It is noted that the Slip Road route sections do not all match. Of particular concern is Route Section 13 (Motorway to J9 WB) which is modelled too quickly in the Morning and too slowly in the Evening Peak period with percentage differences of 17% in both cases. In the Evening Peak it is additionally noted that Route Section 10 (Motorway to J9 EB) is also too quick with a percentage difference of 20%.</p> <p>Given the above issues, which are more pronounced for Route Section that covers the motorway to J9 WB, caution will have to be applied to the interpretation of any modelling results. This will be particularly the case where there is a material impact on either slip road.</p> |
| <p>General Observations</p> | <p>Whilst the local network is not a particular area of interest for Highways England, it is noted that WSP, on behalf of WBC, have raised several issues for which they have asked TMG to address.</p>  |

Overall, the model looks to be of a reasonable standard along the main study corridor. A number of issues which have been noted in the previous reviews and many have now been addressed with improved calibration and validation data.

Given the above, the base model can be recommended as being fit-for-purpose in the area of interest to Highways England with the caveat that caution should be applied to results for the Westbound Off-slip in both peak periods and the Eastbound Off-Slip in the Evening Peak.

**Matrix Conversion - Review**

TMG have supplied two versions of the matrix conversion spreadsheet alongside various emails that attempt to set out the process of conversion. Only the latter version of the spreadsheet has been reviewed.

It should be noted that it is Atkins' opinion that the process of converting flows from SATURN to Vissim for the future years has been made significantly more complex by TMG's decision to convert the supplied Vissim model from dynamic assignment to static assignment. This is because dynamically assigned models use matrices which can be directly matched to SATURN cordon matrices whilst static input with static routing models use a broken-up process of adding in flow using inputs and then routeing that flow separately using downstream routeing decisions.

Further, the above described process not only means that the Vissim model inputs are being converted from inputs with routes to a matrix for comparison with SATURN but that the output matrix from the conversion process is then re-converted to inputs and routes and significant complexity and significantly increasing the risk of error introduction.

**Review of Spreadsheet Steps**

In the 'USAGE' Tab the process of conversion is set out. Atkins has attempted to follow the steps in order to check the process and this is described below.

At the start of the described process it is set out that *'Each scenario has been converted into the LinSig OD calculation from the first version of the base modelling exercise'*. However, from reviewing the LinSig screenshot provided elsewhere in the spreadsheet, it is clear that the physical scope of that model does not match the physical scope of the Vissim model. As such, this immediately, and apparently unnecessarily makes the process more complicated as it requires the modeller to merge and then break-up values due to the inconsistency.

It is therefore suggested that the area covered by the LinSig model is matched to that of the Vissim model to simplify the process and to add robustness to it. It is already presumed that the area covered by the cordoned SATURN model is the same as the Vissim model for obvious reasons.

In the next row, the next step is set out that 'By selecting the scenario in cell E24 on both the *MATRIX\_Diffs\_AM* and *MATRIX\_Diffs\_PM* tab the spreadsheet will automatically calculate the new *INPUTS* and *ROUTES* for the Vissim model using the *ABSOLUTE Differences* or *RELATIVE (%) Differences*'. However, this suggests that the process is not fixed, not complete and therefore not auditable at this stage.

It is therefore suggested that the process used is completed, made clear and submitted as a final process for audit.

In the defined first step in the 'USAGE' Tab it is set out that Cars and LGVs are not split in the SATURN model. This is a surprise as it would be expected that there are several user classes for 'light' vehicles in the SATURN model and clarification is therefore sought. Should this be the case then the process followed to convert the flows as described in this row of the spreadsheet is acceptable.

The document goes on to describe the information provided in the subsequent tabs starting with the tabs – *AM\_BaseVISSIM* and *PM\_BaseVISSIM*. For simplicity, only the AM tab has been reviewed here.

In the spreadsheet tab there is a large table which is pasted from the Vehicle Inputs list in the Base Vissim. This appears to match to the supplied model.

Underneath this table is another table which is described as 'CHECKS TOTAL FLOW PER OD AND VEH TYPE AND RETURNS PROPORTION OF TOTAL OD'. However, as the data relates to the vehicle inputs from the table above, no Origin-Destination (OD) data is available at this stage to process (as vehicle inputs are only Origins). It is therefore unclear as to what this table is doing although it may be designed to merge inputs to match the LinSig model described above.

Under the steps set out in the 'USAGE' tab, the *AM\_BaseVISSIM* tab should clearly show how separate matrices have been derived for each time period and vehicle type for the base Vissim model. However, the tab appears to include a step related to calculated difference to the SATURN model which is illogical for the base Vissim. In addition, it is not clear at all how the calculated matrices have been worked out.

For example, the M62 West input for Cars is modelled in Vissim as Input 178, which is labelled as 'Parking Lot 1083' (with parking lots related to the removed Dynamic Assignment). In LinSig, and therefore the matrices, this is modelled as Zone I.

In Vissim, the input value for the first three time periods have been compared to the matrices in *AM\_BaseVISSIM* as below.

| Time Starting (seconds) | Vissim Input | AM_BaseVISSIM |
|-------------------------|--------------|---------------|
| 0                       | 4479.0       | 4454.99       |
| 600                     | 4452.6       | 4428.58       |
| 1200                    | 4482.5       | 4458.47       |

And so it appears that the matrices that are apparently matched to the Vissim Inputs do not match even allowing for small rounding errors.

As the remainder of the spreadsheet is also very difficult to follow through and because the start point matrices appear to be incorrect, the remainder of the spreadsheet is not reviewed in detail.

**Summary**

Atkins has been commissioned by Highways England to audit a base VISSIM model and supporting Local Model Validation Report (LMVR) which has been produced by the Modelling Group on behalf of Highgate Transportation (HT) who have been commissioned by Satnam Millennium Ltd (Satnam) in support of the proposed development of land at Peel Hall in Warrington. Further, Atkins have been commissioned to review spreadsheet work related to the conversion of future year flows from a SATURN model for use in the Vissim model so that scenarios can be created.

**Base Vissim Model**

The base Vissim model has been found to be of a reasonable standard along the main study corridor. The base model can be recommended as being fit-for-purpose in the area of interest to Highways England with the caveat that caution should be applied to results for the Westbound Off-slip in both peak periods and the Eastbound Off-Slip in the Evening Peak.

**Matrix Conversion Spreadsheet**

The supplied matrix conversion spreadsheet has been reviewed and is thought to not be fit for purpose. Firstly, the labelling of the tabs and explanation of the steps taken are not sufficiently clear that the work can be accurately reviewed. Secondly, the approach to the work appears to include models with different geographical coverage which adds complexity apparently unnecessarily. Thirdly, when reviewing the base matrices to the base Vissim model, the flows don't appear to match. And finally, when attempting to follow the steps through to future year matrices, Atkins was unable to follow the work as set out.

Yours faithfully

*Gavin Coupe*

**Subject:** RE: Pins Ref: APP/M0655/W/17/3178530 - Peel Hall Transport Assessment Addendum - VISSIM  
**Date:** Wednesday, 10 June 2020 at 18:38:28 British Summer Time  
**From:** Heywood, Robert  
**To:** Fiona Bennett, Taylor, Mike  
**CC:** 'dave.tighe', Colin Griffiths, Luke Best, Coupe, Gavin D, Laverick, Benjamin, Dickin, Alan, Skinner, Helen, Wright, Colin  
**Attachments:** 5188540.057 Peel Hall Base Vissim Review.pdf, 5188540.057 Peel Hall ES Addendum 2 Review.pdf

Fiona,

Atkins have now concluded their review of the Base Vissim Model and ES Addendum on our behalf.

### **Base Vissim Model Review**

The model has been found to be of a reasonable standard along the main study corridor. The base model can be recommended as being fit-for-purpose in the area of interest to Highways England.

### **ES Addendum Review**

The document provides an accurate summary of the current status of the proposal when compared to the most recent relevant documents of which the most relevant is the Addendum to the previously submitted Transport Assessment (TA).

However, it is noted that the Future Year modelling is not yet agreed and as such, conclusions drawn with regards to the modelling may be subject to change. In addition, it is noted that the distribution of traffic and therefore the impact on junctions, including the M62 J9, is predicated on the internal layout including the location of accesses, the bus gate and the layout of the local centre car park.

If the proposals change in a way that is material to the distribution then the impact may change and the assessments will clearly need re-working.

### **Next Steps**

I would envisage that the required next steps in order for Highways England to provide an updated position prior to inquiry would be first of all review and agree the future year modelling based upon the now fit-for-purpose base model and secondly review the conclusions of future year modelling.

I have attached the reviews carried out by Atkins on our behalf for your reference.

Kind regards,

Rob

**Robert Heywood, Route Manager**  
Network Development & Planning Team  
Highways England | Atlantic House | Birchwood Boulevard | Warrington | WA3 7WE  
**Mobile:** + 44 (0) 7785 925 993

Our reference: 5188540.057

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05 June 2020

Dear Ben

## Peel Hall Vissim Model – Base Model Review

Atkins has been commissioned by Highways England to audit a base VISSIM model and supporting Local Model Validation Report (LMVR) which has been produced by the Modelling Group on behalf of Highgate Transportation (HT) who have been commissioned by Satnam Millennium Ltd (Satnam) in support of the proposed development of land at Peel Hall in Warrington.

It should be noted at the outset that, as with previous reviews, this review focuses on the parts of the network that are of interest to Highways England. As such, it cannot be said that Highways England agrees or disagrees with any part of the work that does not fall under that heading.

In summary, The Modelling Group has addressed all the model audit comments raised in our previous model review (ref 5188540.047) issued on the 7th February 2020 and Review of Transport Assessment Addendum Report (ref 5188540.053) issued on the 14th April 2020. And noting this, improvements have been noticed with regards to both the traffic count and journey time validation.

For ease of reading, the review criteria are reflectant of those set out in the previous model reviews with further commentary as follows:

| Review Criteria              | Comments  |
|------------------------------|---|
| Basic Model Coding           | The basic model coding is improved and now deemed appropriate   |
| Use of Modifications         | The updated approach for scenario management within VISSIM is deemed appropriate (note that this applies to the review of the base model only)  |
| Method of Assignment         | It is again recommended that The Modelling Group remove all Dynamic Assignment elements within the model for simplification. This will not impact on the model being fit-for-purpose but will simplify the model by removing unnecessary 'clutter' within the coding.                       |
| Temporal Scope               | The temporal scope has always been deemed appropriate   |
| Network Layout Coding        | The network coding for the base model is now deemed appropriate   |
| Driving Behaviour Parameters | The Driving Behaviour Parameters have been updated as recommended. Link behaviours for all slip road links at M62 J9 now use the same behaviour type '203: Slip Roads' with a gradient of 7%.<br><br>It is felt that this is both more accurate and a more robust basis for the assessment. |

|   |   |
|---|---|
| Traffic Functions Setting               | All HGV acceleration and deceleration functions have now been updated to match current default settings found within VISSIM version 2020.<br><br>It is felt that this is both more accurate and a more robust basis for the assessment.   |
| Signals                                 | Traffic signal timings for M62 J9 have been acquired from Warrington Borough Council and have now been incorporated in the base model. This is an important update and is welcomed.   |
| Speed Distributions and Speed Decisions | The speed limit of 20 mph has now been incorporated in the base model where applicable.   |
| Calibration to Counts                   | Following the changes as outlined above, the LMVR reports 100% of model flows are within a GEH value of less than 5 which is therefore within the WebTAG threshold.<br><br>It is noted that this is an improvement on the original modelling thus ratifying our comments which have assisted The Modelling Group with the model improvements            |
| Validation to Journey Times             | Following the changes as outlined above, the LMVR reports more than 85% of the journey time segments are within 15% (or within 1 minute) which is within the WebTAG threshold.<br><br>It is noted that this is an improvement on the original modelling thus ratifying our comments which have assisted The Modelling Group with the model improvements |
| General Observations                    | Whilst the local network is not a particular area of interest for Highways England, it is noted that there is a significant queuing on Northway in the Morning Peak model which exceeds the link length and is felt to be unrepresentative.   |

Overall, the model looks to be of a reasonable standard along the main study corridor. A number of issues which have been noted in the previous reviews have now been addressed with improved calibration and validation data.

Given the above, the base model can be recommended as being fit-for-purpose in the area of interest to Highways England.

**Summary**

Atkins has been commissioned by Highways England to audit a base VISSIM model and supporting Local Model Validation Report (LMVR) which has been produced by the Modelling Group on behalf of Highgate Transportation (HT) who have been commissioned by Satnam Millennium Ltd (Satnam) in support of the proposed development of land at Peel Hall in Warrington.

The model has been found to be of a reasonable standard along the main study corridor. The base model can be recommended as being fit-for-purpose in the area of interest to Highways England.

Yours faithfully

Gavin Coupe



**From:** "Taylor, Mike" <mike.taylor@warrington.gov.uk>  
**Date:** Monday, 20 April 2020 at 13:22  
**To:** Fiona Bennett <fiona.bennett@highgatetransportation.co.uk>  
**Cc:** "dave.tighe" <dave.tighe@highgatetransportation.co.uk>, "Wright, Colin" <Colin.Wright@wsp.com>, "Dickin, Alan" <adickin@warrington.gov.uk>  
**Subject:** RE: Peel Hall Transport Assessment Addendum - Post Meeting Response - VISSIM Base Model

Fiona,

Apologies for the delay I've only just received feedback from our Signals Team.

They have commented as follows:

*The signals at M62J9 have been upgraded recently and now run MOVA. The inter-green times are fixed at 6 secs for all conflicting phases. The previous inter-greens prior to the signal upgrade may have been longer, possibly 8 secs, as the two motorway off-slips had speed assessment loops which were faulty meaning 2 secs was permanently added to the minimum inter-green time. FYI MOVA does not utilise speed assessment loops. These signals are now linked to the signals at the junction of Delph Lane (B&Q) which also run MOVA.*

*I would suggest that the MOVA timings could have been extracted from these sites and fed into the model to make it more accurate.*

*The queuing on Sandy Lane West does stretch back to the roundabout at Sandy Ln and beyond. In the past we have received several complaints from MOP's to this affect. I have also witnessed the queues whilst on site and can confirm the queue occasionally extends as far as Pentland Ave. We have no video footage of this as the camera located within the roundabout on the A49 is unable to see down Sandy Lane. I can confirm that the timings are AM 10s green time (52s cycle time) and PM 13s green time (70s cycle time) for the junction of Sandy Ln/A49 Winwick Rd which currently runs fixed UTC plans as it is essential to keep all arms of the junction in sync. This approach suffers from the arrangement of the entry/exit to the Fordton retail park which essentially starves the A49 Winwick Rd/Sandy Lane junction of traffic as a single right turning vehicle into the retail park blocks the ahead movement. Also it should be noted that vehicles regularly stop on Sandy Ln to give way to right turning vehicles out of the retail park. I believe this was commented on previously during the planning phase of the retail park. Any mitigation or increase in green time on this approach is wasted as vehicles cannot get to the stop line due to traffic entering/exiting the retail park and therefore does not reduce queue lengths. Maybe the retail park arrangement could be looked at as a priority?*

*Also the A49/Sandy Lane/Cromwell roundabout would benefit if MOVA control was implemented on this junction to include the signals at Cromwell Ave/Calver Rd.*

In respect of the VISSIM model I have attached WSP's latest review for information/action.

Let me know if you need any further information.

Regards

Mike

**Mike Taylor**

Transport Development Control Team Leader

**From:** Fiona Bennett <fiona.bennett@highgatetransportation.co.uk>  
**Date:** Monday, 20 April 2020 at 12:31  
**To:** "Taylor, Mike" <mike.taylor@warrington.gov.uk>  
**Cc:** "dave.tighe" <dave.tighe@highgatetransportation.co.uk>, "Wright, Colin" <Colin.Wright@wsp.com>  
**Subject:** Re: Peel Hall Transport Assessment Addendum - Post Meeting Response - VISSIM Base Model

Afternoon Mike,

We are being delayed in the circulation of our updated VISSIM base model by not having the information referred to below:

- M62J9 intergreens;
- Sandy Lane West green times; and
- Base year queuing on Sandy Lane West and Long Lane.

---

You will recall that this first arose at the conference call with Highways England two weeks ago.

Kind regards,  
Fiona

Fiona Bennett

Highgate *Transportation*

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**From:** "Wright, Colin" <Colin.Wright@wsp.com>  
**Date:** Tuesday, 14 April 2020 at 11:58  
**To:** Fiona Bennett <fiona.bennett@highgatetransportation.co.uk>, "Coupe, Gavin D" <Gavin.Coupe@atkinsglobal.com>  
**Cc:** "'Dave Tighe (dave.tighe@highgatetransportation.co.uk)'" <dave.tighe@highgatetransportation.co.uk>, Colin Griffiths <colin@satnam.co.uk>, Luke <luke@modelling.group>, "Taylor, Mike" <mike.taylor@warrington.gov.uk>, "Dickin, Alan" <adickin@warrington.gov.uk>, "Laverick, Benjamin" <Benjamin.Laverick@highwaysengland.co.uk>, "Heywood, Robert" <Robert.Heywood@highwaysengland.co.uk>, "Lu, Tao" <Tao.Lu@wsp.com>, "Pendergast, John" <John.Pendergast@wsp.com>, "Wong, Lun" <Lun.Wong@atkinsglobal.com>  
**Subject:** RE: Peel Hall Transport Assessment Addendum - Post Meeting Response - VISSIM Base Model

Fiona

Can we hold on until we get feedback from Mike. He's back to work tomorrow I think. He was looking at a couple of things:

- M62J9 intergreens;
- Sandy Lane West green times; and
- Base year queuing on Sandy Lane West and Long Lane.

Thanks

Colin

**Colin Wright**  
Principal Transport Planner

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**From:** Fiona Bennett <fiona.bennett@highgatetransportation.co.uk>  
**Date:** Tuesday, 14 April 2020 at 11:14  
**To:** "Coupe, Gavin D" <Gavin.Coupe@atkinsglobal.com>, "Wright, Colin" <Colin.Wright@wsp.com>  
**Cc:** "Dave Tighe (dave.tighe@highgatetransportation.co.uk)" <dave.tighe@highgatetransportation.co.uk>, Colin Griffiths <colin@satnam.co.uk>, Luke <luke@modelling.group>, "Taylor, Mike" <mike.taylor@warrington.gov.uk>, "Dickin, Alan" <adickin@warrington.gov.uk>, "Laverick, Benjamin" <Benjamin.Laverick@highwaysengland.co.uk>, "Heywood, Robert" <Robert.Heywood@highwaysengland.co.uk>, "Lu, Tao" <Tao.Lu@wsp.com>, "John.Pendergast@wsp.com" <John.Pendergast@wsp.com>, "Wong, Lun" <Lun.Wong@atkinsglobal.com>  
**Subject:** Re: Peel Hall Transport Assessment Addendum - Post Meeting Response - VISSIM Base Model

Morning all,

Further to the email correspondence of last week, are there any further comments regarding the VISSIM base model that need to be picked up before we circulate the revised base report package.

Kind regards,  
Fiona

Fiona Bennett

Highgate *Transportation*

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**Subject:** RE: Peel Hall Transport Assessment Addendum - Post Meeting Response

**Date:** Wednesday, 8 April 2020 at 11:44:00 British Summer Time

**From:** Coupe, Gavin D

**To:** Fiona Bennett, Wright, Colin

**CC:** 'Dave Tighe (dave.tighe@highgatetransportation.co.uk)', Colin Griffiths, Luke, Taylor, Mike, Dickin, Alan, Laverick, Benjamin, Heywood, Robert, Lu, Tao, John.Pendergast@wsp.com, Wong, Lun

Fiona,

I've provided some clarifications on this in red below.

Regards,

Gavin

**Gavin Coupe** BSc (Hons) MSc MTPS

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2nd Floor, The Exchange, 3 New York Street, Manchester, M1 4HN

**From:** Fiona Bennett <fiona.bennett@highgatetransportation.co.uk>

**Sent:** 08 April 2020 10:32

**To:** Wright, Colin <Colin.Wright@wsp.com>; Coupe, Gavin D <Gavin.Coupe@atkinsglobal.com>

**Cc:** 'Dave Tighe (dave.tighe@highgatetransportation.co.uk)' <dave.tighe@highgatetransportation.co.uk>;

Colin Griffiths <colin@satnam.co.uk>; Luke <luke@modelling.group>; Taylor, Mike

<mike.taylor@warrington.gov.uk>; Dickin, Alan <adickin@warrington.gov.uk>; Laverick, Benjamin

<Benjamin.Laverick@highwaysengland.co.uk>; Heywood, Robert

<Robert.Heywood@highwaysengland.co.uk>; Lu, Tao <Tao.Lu@wsp.com>; John.Pendergast@wsp.com

**Subject:** Peel Hall Transport Assessment Addendum - Post Meeting Response

Dear Gavin and Colin,

We have summarised the points arising from Monday's meeting as follows:

- i. Sensitivity test using WMMTM16 Peel Hall Saturn modelling with a signal junction coded at the Delph Lane/Myddleton Lane junction (and widening and ghost right turn lane at A49 Newton Road/Golbourne Road junction) – Do Something 2022 and 2032 (full development); assessing impact using difference plots (Do Something 2022 and 2032 v Do Something Mitigation 2022 and 2032) – The approach taken with the modelling to date is that the SATURN model is allowed to redistribute background traffic when the scheme traffic is loaded onto the network due to a change in delay caused by the additional flows. When the mitigation is introduced, the model has not been re-run to understand the redistribution due to the change in delay caused by the mitigation. This is inconsistent and it is suggested that understanding the change in assignment due to delay is considered. It was suggested by WSP that this could be done as a sensitivity test.
- ii. Signal timings on the M62 J9/A49 junction – are longer intergreen times being used by WBC than set out in the controller spec? What is the impact of this? – from the work Atkins undertook and shared during the public inquiry, it was known that at the time, the M62 J9 ran with longer intergreens and fixed time

green times during the peak periods. This information was shared with all parties at the time. The Vissim model is inconsistent against this model. However, it is also understood that the control has been updated. It is requested that WBC provide further information on this to all parties.

- iii. Difference between traffic flow loadings in the VISSIM at M6 J21a in 2019 base model and future year scenarios – is there a significant impact to mainline traffic flows? – The Modelling Group have used the SATURN flows for future year directly in the future year model scenarios. Atkins do not recommend this approach unless the SATURN model has been through the same level of Val/Cal in the base as the Vissim such that the base flows are very, very similar and only then, with caution. This approach needs to be considered given there appear to be significant differences in flow at points within the model such as M6 J21
- iv. Base model queues on A50 and Sandy Lane West loading onto the A49 appear shorter than reality; is the model underestimating queueing and delay at these points. What is the significance of this?
- v. In future year scenarios it appears that the development trips are coded with a HGV power/weight profile, rather than a car power/weight profile. Is this the case and what is the impact of this?
- vi. In the matrix estimation it appears that there is a difference between the inputted WMMTM16 peak hour flows to LinSig then into the VISSIM. How has this occurred and is this significant?
- vii. There are error messages in the Option A simulations regarding minimum green time violations in the signal controller. Is this significant?

Atkins provided clarity on the point regarding power/weight distributions for HGVs which might be causing slow HGV vehicles in the network. It was explained that this is known 'problem' with Vissim models taken forward from older versions of Vissim (such as this one) and that a potential solution is to re-code the values to match contemporary versions of Vissim such as Vissim 2020 Atkins again raised the issue of very large amounts modification files being used in the model making it hard to check and trace the coding in any scenario. POST MEETING NOTE - Although our audit is not complete, it appears that this might be causing the mitigation coding to appear in the Do Minimum scenarios. We will clarify in our full response

In terms of progress on these points, we summarise each point in turn:

- i. Sensitivity test - We can confirm that the WBC/AECOM WMMTM16 team were emailed following our meeting with a proforma for this sensitivity work.
- ii. Signal Timings – the timings in the model are based on the previous modelling that was signed off in 2017, and are considered reasonable. It is not known if there are longer intergreens running on site in the peak hours; it is known that on site the signals run MOVA. – As above, detailed information was provided by WBC to Atkins during the PI to allow Atkins to produce a model which was shared. The information used to inform this model and the model itself supersede previous work made on previous assumptions. However, as the controller has been updated, it would remove ambiguity for all parties if WBC can provide current information in the form of controller spec, drawing, and operational timings (pre Covid-19 if at all possible).

It should be noted that the future year signals are adapted and if the intergreens in the base were to be made longer, this would just be adapted in the future years in any event i.e. the model is a like for like comparison, and would be a like for like comparison if it were changed now for a longer intergreen. What is clear is that the required volume of traffic gets through the junction and although originally the base model journey times were 21 seconds out across the junction (i.e. across of distance of some 250m), in the latest version of the Base Modelling Report (Appendix 32 of the TA Addendum), after the issues raised in the audits had been worked on, this reduced to a maximum of a 6 second difference in the peak hours.

Given that the base model across M62 J9 is now actually only out by 6 seconds, it is clear that a change to the intergreens will not make a significant difference to the performance of the base model or conversely that without altering the intergreens across the M62 J9 the base model should be considered somehow unfit for purpose. As per Atkins original audit, the Journey Time comparison was only for north-south and vice-versa movements and, as such, may be masking poor validation for other movements such as to/from the slip roads. Whilst validation may be improved for the north-south, this may still be masking incorrect green times for the slip roads which would carry through into the assessment. The slip roads and, ultimately, the mainline is of critical importance to highways England

and we want to make sure that the model is fit-for-purpose which includes an accurate assessment of this arms. We will provide more detail in our audit.

As such it is considered this point is not significant.

- iii. M6 J21a Loadings – it has been confirmed by Modelling Group that the issue raised regarding a four-fold difference in flow between the westbound M62 mainline between the base PM and future years is just a difference in the balance of flows between the 3 input arms – when reviewed holistically these flows add up to around the same overall volume.

Differences in volumes between other locations – these relate to differences in the SATURN volumes and is covered in the methodology set out in the submitted Methodology Statement in November 2019 (Appendix 30 of the TA Addendum) i.e. once the WMMTM16 data was processed this would be used to inform the VISSIM inputs and routing volumes. The WMMTM16 was used to provide reliable/signed-off future scenarios for flow and demand. We note the above and will provide a fuller response on the flow differences and how they might impact on the models fitness for purpose in our audit.

- iv. Base Model Queues – it can be confirmed that on Sandy Lane West in the AM peak this queues back to the junction with Sandy Lane and beyond (~650m) by the end of the peak, very much like the image given by Google Traffic. The queuing on Long Lane is not as long as the Google Traffic image (~300m). With the PM, there is little queuing on Sandy Lane West, and queuing on Long Lane reaches approximately 400m.

However, the remedy would be to add more flow, which would then not be relevant under the methodology for future year modelling and as such not significant.

In summary, the methodology was followed and this is not considered to be significant for the future year scenarios which is what the Peel Hall development has been tested in (where queues are shown on these arms).

- v. Development trips coded as HGV not car power/weight profiles – This will be re-run and reported on. The result of this is that Peel Hall trips (cars) will accelerate more slowly than they would be expected to, which would have some (although perhaps not much) negative effect on the results from the proposed scenarios. Rerunning these Do Something scenarios should show improvements across the network.
- vi. Matrix Estimation – This should be clarified by the attached spreadsheet from Modelling Group, which demonstrates that taking hourly flows from the WMMTM16 and then providing percentage breakdowns based entirely on the per zone base model flow profiles and LGV/ car modal splits to give 10min flow inputs to the VISSIM results in the reported differences. It can be noted that the VISSIM runs over a 2.5 hour period (inclusive of warm up and cool down) to assess the development impact.
- vii. Error Message – the minimum green time violations in the signal controller have arisen as a result of the manner in which the vehicle actuated controller in the future years has been coded. For example, the controller is set up to check the program every 0.2 seconds, as in the controller spec some of the detectors extend by 1.6 seconds and some by 0.6. This allows the controller to sometimes initiate a stage change when a signal phase has run, i.e. 6.8 seconds, rather than the 7 seconds which is the minimum green time. This only happens very early on in the scenarios, when the traffic volumes are low (i.e. early in the warm up period). As such, this is a very minor issue that is not significant in terms of impact on the modelling. The Error files suggest that this is occurring throughout the run period and not just at the start. It is likely caused by low demand but may not be as per this response and may be caused by the way that Vissim is understanding the Red/Amber period. Once we have completed our review, we will confirm this.

I trust that the above is helpful. Happy to discuss.

Kind regards,  
Fiona

Fiona Bennett  
Highgate *Transportation*  
Mob: 07595 892 217

**Subject:** Peel Hall Transport Assessment Addendum - Post Meeting Response  
**Date:** Wednesday, 8 April 2020 at 10:32:10 British Summer Time  
**From:** Fiona Bennett  
**To:** Wright, Colin, Coupe, Gavin D  
**CC:** 'Dave Tighe (dave.tighe@highgatetransportation.co.uk)', Colin Griffiths, Luke, Taylor, Mike, Dickin, Alan, Laverick, Benjamin, Heywood, Robert, Lu, Tao, John.Pendergast@wsp.com  
**Attachments:** Linsig\_to\_VISSIM\_Matrix\_Conversion-ProcessExplained[2].xlsx

Dear Gavin and Colin,

We have summarised the points arising from Monday's meeting as follows:

- i. Sensitivity test using WMMTM16 Peel Hall Saturn modelling with a signal junction coded at the Delph Lane/Myddleton Lane junction (and widening and ghost right turn lane at A49 Newton Road/Golbourne Road junction) – Do Something 2022 and 2032 (full development); assessing impact using difference plots (Do Something 2022 and 2032 v Do Something Mitigation 2022 and 2032)
- ii. Signal timings on the M62 J9/A49 junction – are longer intergreen times being used by WBC than set out in the controller spec? What is the impact of this?
- iii. Difference between traffic flow loadings in the VISSIM at M6 J21a in 2019 base model and future year scenarios – is there a significant impact to mainline traffic flows?
- iv. Base model queues on A50 and Sandy Lane West loading onto the A49 appear shorter than reality; is the model underestimating queueing and delay at these points. What is the significance of this?
- v. In future year scenarios it appears that the development trips are coded with a HGV power/weight profile, rather than a car power/weight profile. Is this the case and what is the impact of this?
- vi. In the matrix estimation it appears that there is a difference between the inputted WMMTM16 peak hour flows to LinSig then into the VISSIM. How has this occurred and is this significant?
- vii. There are error messages in the Option A simulations regarding minimum green time violations in the signal controller. Is this significant?

In terms of progress on these points, we summarise each point in turn:

- i. Sensitivity test - We can confirm that the WBC/AECOM WMMTM16 team were emailed following our meeting with a proforma for this sensitivity work.
- ii. Signal Timings – the timings in the model are based on the previous modelling that was signed off in 2017, and are considered reasonable. It is not known if there are longer intergreens running on site in the peak hours; it is known that on site the signals run MOVA.  
It should be noted that the future year signals are adapted and if the intergreens in the base were to be made longer, this would just be adapted in the future years in any event i.e. the model is a like for like comparison, and would be a like for like comparison if it were changed now for a longer intergreen. What is clear is that the required volume of traffic gets through the junction and although originally the base model journey times were 21 seconds out across the junction (i.e. across of distance of some 250m), in the latest version of the Base Modelling Report (Appendix 32 of the TA Addendum), after the issues raised in the audits had been worked on, this reduced to a maximum of a 6 second difference in the peak hours.  
Given that the base model across M62 J9 is now actually only out by 6 seconds, it is clear that a change to the intergreens will not make a significant difference to the performance of the base model or conversely that without altering the intergreens across the M62 J9 the base model should be considered somehow unfit for purpose.  
As such it is considered this point is not significant.
- iii. M6 J21a Loadings – it has been confirmed by Modelling Group that the issue raised regarding a four-fold difference in flow between the westbound M62 mainline between the base PM and future years is just a difference in the balance of flows between the 3 input arms – when reviewed holistically these flows add up to around the same overall volume.



Differences in volumes between other locations – these relate to differences in the SATURN volumes and is covered in the methodology set out in the submitted Methodology Statement in November 2019 (Appendix 30 of the TA Addendum) i.e. once the WMMTM16 data was processed this would be used to inform the VISSIM inputs and routing volumes. The WMMTM16 was used to provide reliable/signed-off future scenarios for flow and demand.

- iv. Base Model Queues – it can be confirmed that on Sandy Lane West in the AM peak this queues back to the junction with Sandy Lane and beyond (~650m) by the end of the peak, very much like the image given by Google Traffic. The queuing on Long Lane is not as long as the Google Traffic image (~300m). With the PM, there is little queuing on Sandy Lane West, and queuing on Long Lane reaches approximately 400m.  
However, the remedy would be to add more flow, which would then not be relevant under the methodology for future year modelling and as such not significant.  
In summary, the methodology was followed and this is not considered to be significant for the future year scenarios which is what the Peel Hall development has been tested in (where queues are shown on these arms).
- v. Development trips coded as HGV not car power/weight profiles – This will be re-run and reported on.  
The result of this is that Peel Hall trips (cars) will accelerate more slowly than they would be expected to, which would have some (although perhaps not much) negative effect on the results from the proposed scenarios. Rerunning these Do Something scenarios should show improvements across the network.
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I trust that the above is helpful. Happy to discuss.

Kind regards,  
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