

**Land at Peel Hall, Warrington**  
**Statement of Common Ground**

**On**

**A49 Corridor VISSIM (Technical Matters)**

**(APP/M0655/W/17/3178530)**

**February 2021**

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## **Appendices**

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## 1.0 Introduction

- 1.1 This is an agreed Statement of Common Ground (SoCG) on VISSIM matters further to the SoCG on highways and transportation matters dated September 2020. This A49 Corridor VISSIM SoCG replaces paragraphs 6.2(i) and 6.2(iv) of the September 2020 SoCG which referred to VISSIM matters.
- 1.2 This A49 Corridor VISSIM SoCG has been prepared by Warrington Borough Council (the Council) in its capacity as local highway authority and Highgate Transportation Limited (HTp) on behalf of the appellant. This Statement sets out areas of agreement and disagreement in connection with the VISSIM model associated with the appeal scheme.
- 1.3 The purpose of the VISSIM modelling is to identify if the proposed mitigation works are sufficient to offset the impact of the Peel Hall development traffic along the A49 corridor under different scenarios.
- 1.4 It was agreed that this VISSIM model would take the 2015 VISSIM A49 corridor model developed originally for Highways England (and developed further by AECOM on behalf of the Appellant to cover a wider area for use at the 2018 inquiry) and update the base model to reflect subsequent network changes (specific new infrastructure and signal timings) and ensure that turning counts and journey times were within WebTAG guidance for a 2019 base year using Manual Classified Count data and TomTom data for journey time validation.
- 1.5 The use of the Council's WMMTM16 was commissioned by the appellant in April 2019 to assess the impact of the appeal scheme by creating a highway-only cordon model, hereafter referred to as Peel Hall WMMTM16. The modelling was carried out by the Council's WMMTM16 modelling team, AECOM. The future year VISSIM models are therefore based on SATURN data from the Peel Hall WMMTM16.

- 1.6 The methodology for the VISSIM modelling was agreed with the Council's highway officers and Highways England in November 2019 (methodology addendum May 2020 also agreed – see both contained in **Appendix SCG/V1**) and that the modelling would be carried out by Satnam's modelling consultants and then provided to the Council and Highways England to be audited by their respective consultants. The VISSIM study area is illustrated on the plan contained in **Appendix SCG/V2**.
- 1.7 The A49 corridor is approximately 3.5 kilometres long and includes the following junctions:
- i. A49/Golborne Road priority junction
  - ii. A49/Winwick Link Road signalised roundabout
  - iii. Delph Lane (B&Q) signalised junction with A49
  - iv. M62 Junction 9 signalised roundabout with the A49
  - v. Sandy Lane West/Cromwell Avenue/A49 signalised roundabout (linked with Cromwell Avenue/Calver Road junction)
  - vi. JunctionNINE Retail Park signalised junction with the A49
  - vii. A50/A49 signalised junction
- 1.8 As part of the methodology, it was agreed that the VISSIM model would be calibrated for turning counts and validated for journey times along the corridor.
- 1.9 Although not part of the calibration or validation process, it was also set out in the methodology that queues would be assessed visually. This was to be a visual assessment of the queues to check the cordoned 2019 corridor VISSIM (revised and updated for 2019 traffic flows) against the 2015 AECOM model base of the wider area.
- 1.10 The methodology confirmed that future year modelling would be carried out for 2022, 2027 and 2032. The different scenarios are:
- i. 2022 Background & Committed Traffic Growth + Committed Mitigation Measures (Reference Case)
  - ii. 2022 Background & Committed Traffic Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed & Proposed Mitigation Measures (Proposed Test)

- iii. 2022 Background & Committed Traffic Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed & Proposed Mitigation Measures + M4 Mitigation Package (Mitigation Test)
- iv. 2027 Background & Committed Traffic Growth + Committed Mitigation Measures (Reference Case)
- v. 2027 Background & Committed Traffic Growth + Peel Hall Development Traffic (Part-Build Out with no Internal Link Development Scenario) + Committed & Proposed Mitigation Measures (Proposed Test)
- vi. 2027 Background & Committed Traffic Growth + Peel Hall Development Traffic (Part-Build Out with no Internal Link Development Scenario) + Committed & Proposed Mitigation Measures + M4 Mitigation Package (Mitigation Test)
- vii. 2032 Background & Committed Traffic Growth + Committed Mitigation Measures (Reference Case)
- viii. 2032 Background & Committed Traffic Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed & Proposed Mitigation Measures (Proposed Test)
- ix. 2032 Background & Committed Traffic Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed & Proposed Mitigation Measures + M4 Mitigation Package (Mitigation Test)

1.11 The agreed committed development schemes that the Peel Hall modelling was to include was set out by the Council as:

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

1.12 The agreed committed development mitigation schemes that the Peel Hall modelling was to include was also set out by the Council as:

- i. A49 Winwick Road/ Junction Nine Retail Park junction improvement works
- ii. A49/ Delph Lane signalised junction improvement works
- iii. A49/Winwick Link Road junction improvement works
- iv. A49 Newton Road/ Hollins Lane junction improvement works

1.13 Arising from the VISSIM modelling, the Appellant's proposed mitigation package for the A49 corridor (see Appendix SCG/V3) is:

- i. MOVA signal upgrade at A49/A50 four-arm signal junction
- ii. Lengthening of the A49 northbound left-turn lane and providing an additional left-turn lane to Cromwell Avenue, including designated lane markings (nearside lane A574 Cromwell Avenue, offside lane Calver Road)
- iii. M62 Junction 9 eastbound on-slip widening and associated works at the A49 junction
- iv. Ghost right turn lane provision at A49 junction with Golborne Road

## 2.0 A49 Corridor VISSIM Timeline

2.1 The first iteration of the base model was issued on 10<sup>th</sup> January 2020 and the first of the future years package with an updated base model on 23<sup>rd</sup> March as part of the Transport Assessment Addendum. Table 2.1 lists the dates when a formal update of the modelling package was submitted, and dates of formal auditor responses.

Table 2.1 – VISSIM Model Submissions and Dates of Auditor Responses

Date Issued	Document Date	Description
10/01/20	10/01/20	Base Model v1
28/01/20	24/01/20	WSP Audit (TN01) of Base Model v1
10/02/20	07/02/20	Atkins Audit of Base Model v1
23/03/20 (TAA)	22/02/20	Base Model v2
23/03/20 (TAA)	04/02/20	Access Strategy A Future Years Modelling (v1) – no Peel Hall mitigation
23/03/20 (TAA)	06/03/20	Access Strategy A Future Years Modelling (v2) – Peel Hall mitigation signal upgrade at A49/A50/Hawley's Lane junction and ghost right turn lane A49/Golborne Road
23/03/20 (TAA)	-	Responses to WSP and Atkins Audits of Base v1
20/04/20	08/04/20	WSP Audit (TN02) of Base Model v2 and Access Strategy A Future Years Modelling
20/04/20	15/04/20	Atkins Audit of TAA (including Atkins Audit of Base Model v2 and Access Strategy A Future Years Modelling)
18/05/20	15/05/20	Base Model v3, commentary and Methodology Addendum
10/06/20	05/06/20	Atkins Audit of Base Model v3
22/06/20	19/06/20	WSP Audit (TN05) of Base Model v3
30/06/20	-	Conversion Spreadsheets
08/07/20	08/07/20	WSP Audit (TN06) of conversion spreadsheets
20/07/20	17/07/20	Base Model v4

03/08/20	31/07/20	Atkins Audit of Base Model v4
06/08/20	05/08/20	Base Model v5.0 (issued as part of package)
06/08/20	04/08/20	Access Strategy A Future Years Modelling (v3) and Matrix Conversion Spreadsheet Peel Hall mitigation signal upgrade at A49/A50/Hawley's Lane junction and ghost right turn lane A49/Golborne Road
17/08/20	14/08/20	Access Strategy A Future Years Modelling (v4) Peel Hall mitigation signal upgrade at A49/A50/Hawley's Lane junction and ghost right turn lane A49/Golborne Road subsequent Mitigation Option S+ Modelling (v4.1) Peel Hall mitigation S+ included original package plus northbound A49 left-turn extension and additional lane at A49/Cromwell Avenue/Sandy Lane West (and Base Model v5.1)
28/08/20	12/08/20	WSP Audit (TN07) of Base Model v4
28/08/20	28/08/20	WSP Audit (TN08) of Base Model v5.1
28/08/20	28/08/20	WSP Audit (TN09) of Access Strategy A Future Years Modelling (v4) and subsequent Mitigation Option S+ Modelling (v4.1) ( <i>as superseding v3</i> )
07/09/20	09/09/20	Atkins Audit of Base Model (v5.1), Access Strategy A Future Years Modelling (v4) and subsequent Mitigation Option S+ Modelling (v4.1) ( <i>as superseding v3</i> )
08/09/20	07/09/20	Base Model v5.2 with Access Strategy A Future Years Modelling (v5.1) and Mitigation Option S+ (v5.2) Package Peel Hall mitigation signal upgrade at A49/A50/Hawley's Lane junction and ghost right turn lane A49/Golborne Road and the S+ included original package plus northbound A49 left-turn extension and additional lane at A49/Cromwell Avenue/Sandy Lane West
23/09/20	23/09/20	WSP Audit (TN10) of Base Model v5.2 and Access Strategy A Future Years Modelling and Mitigation Option S+ (v5.1 and v5.2)
23/09/20	23/09/23	Atkins Audit of Base Model v5.2 and Access Strategy A Future Years Modelling and Mitigation Option S+ (v5.1 and v5.2)
16/10/20	15/10/20	Base Model v6 and Changes Registry
02/11/20	30/10/20	Atkins Audit Base Model v6
02/11/20	02/11/20	WSP Audit (TN11) Base Model v6
06/11/20	06/11/20	HTp comments on WSP TN11



13/11/20	13/11/20	WBC Base Model v6 sign-off
02/12/20	30/12/20	Access Strategy A Future Years Modelling package with S+ and M4 mitigation (v6)  Peel Hall mitigation signal upgrade at A49/A50/Hawleys Lane junction and ghost right turn lane A49/Golborne Road including the M4 package northbound A49 left-turn extension and additional lane at A49/Cromwell Avenue/Sandy Lane West (S+) and M62 Junction 9 eastbound on-slip widening and associated works
08/01/21	11/01/20	WSP Audit (TN12) Access Strategy A Future Years Modelling package with S+ and M4 mitigation (v6)
11/01/21	14/12/20	Atkins Access Strategy A Future Years Modelling package with S+ and M4 mitigation (v6)

### **3.0 A49 Corridor VISSIM Base Model**

- 3.1 The final version of the base model was issued on 16<sup>th</sup> October 2020.
- 3.2 Highways England confirmed that the base model (v6) is acceptable in the area of interest to Highways England on 2<sup>nd</sup> November 2020.
- 3.3 The Council confirmed that the base model (v6) is acceptable on 13<sup>th</sup> November 2020.

## 4.0 A49 Corridor VISSIM Future Year Models

- 4.1 The final version of the A49 Corridor VISSIM future years modelling was issued on 2<sup>nd</sup> December 2020.
- 4.2 The position of Highways England is that the A49 Corridor VISSIM future year modelling is suitable in the area of interest to Highways England.
- 4.3 The position of the Council is 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 Saturn
  - 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
    - c. Notwithstanding the technical concerns raised in paragraph 4.3 the position of the Council on the model outputs is:
      - Development impact on Sandy Lane West cannot be mitigated for given the level of latent demand and queueing shown within the modelling
      - Development impact on the A50 Long Lane cannot be assessed given the level of latent demand and queueing shown within the modelling
- 4.4 The position of the Appellant is that the A49 Corridor VISSIM future year modelling is sound and suitable for assessing the impact of the Peel Hall development, and that:
- i. The agreed methodology for the conversion of forecast demand from Saturn to VISSIM has been followed and therefore as a result there is no 'underestimate'
  - ii. The volume of vehicles in VISSIM that merge on Cromwell Avenue between the location of the proposed mitigation as it meets Cromwell Avenue and the signal junction with Calver Road, are clearly lower in the Do Something modelling with

the mitigation when compared to the equivalent Do Minimum modelling without mitigation

- iii. Signal optimisation in the future years modelling at A49/ Cromwell Avenue/ Sandy Lane West roundabout within the VISSIM is suitable
- iv. Development impact on Sandy Lane West is not severe and the proposed mitigation at the A49/ Cromwell Avenue/ Sandy Lane West junction is appropriate
- v. Development impact on the A50 Long Lane is not severe

## 5.0 Areas of Agreement and Disagreement

5.1 The areas of agreement with the Council can be summarised as:

- i. The base model (v6) is agreed
- ii. A contribution to be secured for works to the A49/A50/Hawley's Lane signal junction MOVA upgrade (including lining and loops) – trigger to be agreed
- iii. Works to provide widening and ghost right turn lane at the A49/Golborne Road junction - triggered prior to occupation of the 300<sup>th</sup> dwelling
- iv. Works to provide M62 eastbound on-slip widening from Junction 9, and associated improvements at its junction with the A49 – trigger to be agreed
- v. Need for mitigation at A49/Cromwell Avenue/Sandy Lane West junction

5.2 Discussions are ongoing regarding the level of contribution for MOVA at the A49/A50/Hawley's Lane signal junction.

5.3 The current areas of disagreement with the Council can be summarised as :

- i. Suitability of the future year VISSIM models
- ii. Form of proposed mitigation at the A49/ Cromwell Avenue/ Sandy Lane West junction as a result of the Peel Hall development
- iii. Triggers for proposed mitigation
- iv. Interpretation of VISSIM future year outputs regarding impact of Peel Hall development

Paul Clisby

Signed on behalf of Warrington Borough Council on 23 February 2021

Paul Tyle

Signed on behalf of the Appellant on 23 February 2021

# Appendix SCG/V1

## VISSIM Methodology

(v1.2 November 2019 and May 2020 Addendum Methodology)

<b>Project</b>	A49 Corridor, Warrington		
<b>Report Title</b>	Proposed VISSIM Modelling Methodology		
<b>Version</b>	1.2	<b>Date:</b>	01/11/2019
<b>Prepared by:</b>	Luke Best	<b>Reviewed by:</b>	Carl Moreno
<b>Client:</b>	Satnam Millenium Ltd.		

## 1. Introduction

1.1. This document is intended to set out the proposed methodology for the development of VISSIM micro-simulation models of the area to the north of Warrington, and south of Winwick, surrounding the A49 corridor (see Figure 1 below).

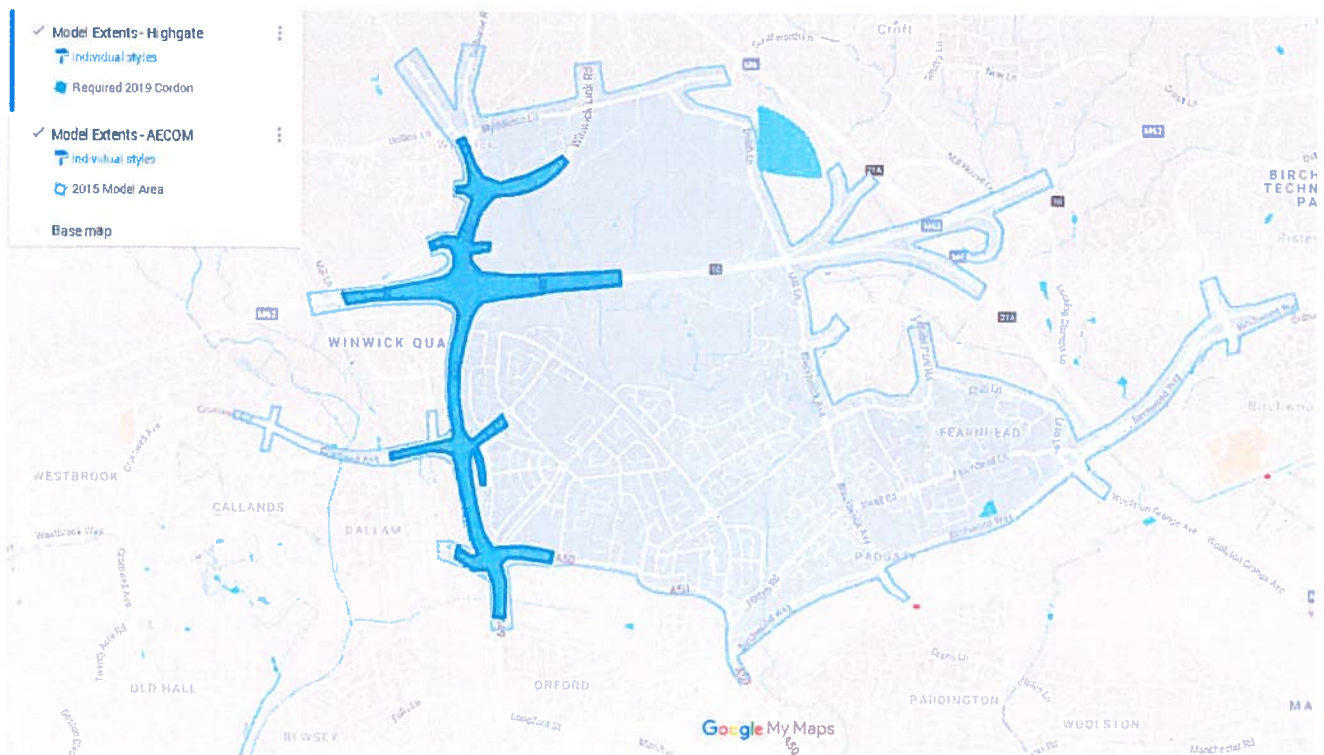


Figure 1: Proposed Model Extents

1.2. A corridor model of the A49 was developed in 2014 by AECOM, and then extended to cover the Peel Hall study area and growthed to a 2015 base year in 2017, as agreed with Highways England and Warrington Borough Council. Given that the area of interest is now the A49 corridor itself, rather than the much larger area of the extended Peel Hall study, there is now a need to cordon the model/s to the required A49 area only, which will make them much easier to work with, taking account of the following:



- The models are already approved in their current extents and base flow years. There is a desire to adjust the model extents without needing to carry out another full recalibration and revalidation exercise.
  - The base year models are 2015, which is now 4-years old. Guidance states that models should not generally use traffic survey/ flow data older than 3-years old, without careful checking in order to ensure that the models are still representative and fully fit for purpose.
- 1.3. The aim of this document is therefore to set out a methodology which demonstrates that with the correct approach, sufficient due diligence and proof of checking, the current model/s can be used with minimal overall adjustment (other than that necessary to network extents and flows). Every effort will be made to prove that the models are still directly comparable to both the original models and to more current traffic survey information.
- 1.4. If this methodology is deemed acceptable, it should allow a faster route to a suitable base model proven to be robust and fit for purpose, without the need for a full validation and audit approval route – the model has already been approved, so the effort will be put into proving that performance is still comparable to the original model/s after the cordoning process.

## 2. Convert Existing Model to Static Assignment

### Full Internal Peer Review:

- 2.1. It is already noted that the model is built in VISSIM version 8.00-04.
- 2.2. A check will be carried out as to whether converting this to a newer version of VISSIM (latest tested and stable version is currently 11.00-11) will make any sort of significant difference to calibration and validation data. Version 8 has previously been found to be less stable than more current versions, and also has early development implementations of certain tools (i.e. scenario manager) which can be extremely useful for ensuring consistency and efficiency of delivery. Later versions of VISSIM also make much better use of computer resources, leading to much faster run times.
- 2.3. If the validation and performance differences are proven to be minimal when compared against the original models running in the original software version, the model will be converted to a newer VISSIM version to take advantage of updated features, reliability, stability and speed.

## Convert Assignment from Dynamic to Static:

- 2.4. Due to the need to 'freeze' the assignment found in the current AECOM model; it is proposed to convert the assignment from dynamic to static. As there is no route choice, it is not felt that this will necessarily affect the future usefulness of the model, whilst also contributing to the possibility of not needing a full re-validation of the base scenario by ensuring that all elements stay as close to the original as possible.
- 2.5. This is a process of going through each vehicle type, separately creating static routing (in theory, the inbuilt 'convert to static routing' tool found within the dynamic assignment module should just be able to do this in one go, but experience suggests carrying this out manually).
- 2.6. Once the assignment has been converted, a full check will be carried out in order to ensure no erroneous routes have been created, and a full visual check to check for any issues which would suggest issues with the assignment conversion.

## 3. Cordon Model Area to Agreed Extents:

### Cordon Static Routing

- 3.1. This process is completed using a bespoke VBA macro which tracks the link sequence of each newly defined static route within the \*.inpx file, cutting it and defining a new end on the links which will become the extents of the newly cordoned network.
- 3.2. A full visual check of all newly created cordoned static routing will be carried out at this stage to ensure that all routes previously passing through our area of interest are now captured and cordoned to the required extents.

### Cordon Physical Network

- 3.3. The process of carefully trimming the network structure will be completed manually, cutting links to separate the agreed area of interest from the larger, older model. All network elements will need to be set to 'on' visually in order to ensure that no errors are created, or existing objects broken. PT lines will need adjusting as the link editing takes place, making sure that all routes passing through the agreed area of interest are adjusted to have new start and/ or end points.
- 3.4. The unwanted, larger model area will then be deleted, leaving the cordoned physical network with all physical elements intact, static routing per vehicle type, and public transport routing all as it was previously in the larger model.

### Cordon Time Period

- 3.5. As a result of the considerable reduction in overall network scale and extents, it may prove reasonable to reduce the simulation time period currently found in the AECOM models, although this will need to be dependent on traffic conditions and the local peak profile. The current model simulation time periods are as follows:
  - AM model – 07:00-09:30 (2.5 hours)
  - PM model – 16:00-18:30 (2.5 hours)

- 3.6. There is currently heavy congestion in this area, so it may be that longer warm-up and/or cool-down periods are necessary, but with the revised, reduced model extents, a two-hour simulation period with half-hour warm-up and cool-down periods would normally be considered adequate.

### Create New Vehicle Inputs

- 3.7. This process is also completed using a bespoke VBA macro, which will pick up all flows from all routes as the new cut down static routes are created and pass the data per vehicle type to new vehicle inputs for the cordoned model.
- 3.8. All vehicle inputs will then need manually checking – the internal VISSIM processing tool for converting dynamic assignment into static assignment tends to create a unique traffic composition for each vehicle input, for each time period, with vehicle types entered as a factor of the actual flow. This is rather clumsy to work with, as there is a volume and set of factors per vehicle type for every time period (every 10 minutes for this model), for every input. In comparison, the external VBA macro creates vehicle inputs with actual flows, per vehicle type, per time period, which is judged to be easier to work with. Any remaining VISSIM default input formats will therefore be converted so that all model inputs are consistent, in the same format.

## 4. Check Model Flows

### Comparison Against Original 2015 Model Flows

- 4.1. First phase checks are to ensure that all data has been correctly converted from the original dynamic assignment models to the new static assignment models. Link counts and junction turning counts will be checked for all vehicle types. Differences will be expected to be minor – the GEH statistic will be used as a test, all measures will be expected to achieve 3 or lower.
- 4.2. Second phase checking will be to then compare the static 2015 models against all currently held traffic survey data. There is a large, mixed dataset including Automatic Traffic Counts (ATC), Manual Classified Counts (MCC) and Queue length surveys (see Figure at the end of this note). The data held covers a large range of relevant sites, as well as spanning the timeframe between 2014-2019. This is particularly useful, as it allows the assessment of the same, or similar, locations but at different times, in order to demonstrate how changes and trends have occurred.
- 4.3. Checks of flows and turning counts will be carried out using the GEH statistic and WebTAG flow criteria. Journey time data will be assessed using WebTAG guidance, as a minimum. Queues will be assessed visually.
- 4.4. Model journey times will be validated against a 'Big Data' source such as TrafficMaster (or similar) for a neutral month in 2019, to ensure that the model is representative of current conditions.
- 4.5. If there are discrepancies, these will likely fall into one of the following criteria:
  - *Network level volume difference* – This would likely primarily represent the naturally occurring difference from 2015-2019 due to background growth/ shrinkage in the wider area. This would generally manifest as a relatively even level of change across the entire network, whilst the overall vehicle flow patterns remained comparatively similar.
  - It is entirely possible that this level of change would not push any individual measures of flow volume and pattern over nationally acceptable validation criteria levels. If this was the case, the model/s would have been proven to still be relevant for use, regardless of the time since their original construction.

- If however there was found to be more significant levels of change (again, acting reasonably and using accepted WebTAG guidelines to inform the decision), it would be the simplest discrepancy to amend, as it would only be a matter of factoring the vehicle volumes for the network until comparative volumes & performance are achieved, with no real physical changes necessarily being needed to the approved model structure, as provided.
- *Local level volume difference* – Whilst this still may just represent the background growth difference from 2015-2019, this would likely manifest as certain areas experiencing localised growth or traffic pattern changes, whilst others did not, or experienced different levels of localised growth or traffic pattern changes. As with the wider network, this would most likely still fall within the ranges set out by WebTAG validation criteria (being used as guidance), which would allow the changes to be defined as non-critical or insignificant, and the model/s would have been proven to still be relevant for use, regardless of the time since their original construction.
- As with the network level volume difference, if there was found to be more significant levels of change in certain areas, a combination of local route factoring and manual volume tweaks for select movements should be able to still ultimately achieve comparative volumes & performance to those recorded in the updated traffic survey data, without any significant changes to the approved model structure, as provided. This should then still be able to be deemed as a model representative of onsite conditions, and therefore robust and fit for the purpose of current option testing.
- *Full Flow Profile & Tidal Flow Change* – This is the only foreseen scenario with a possible outcome that would mean the current model may not be suitable for use without major updating and revalidating. Although very much an outside possibility, this would be a worst-case outcome involving such significant levels of both traffic volume, and traffic profile change, as to render the existing models unsuitable for use. This of course depends on the severity of the differences found – it is a very unlikely outcome in most areas of the country, as four years is usually not nearly enough for the occurrence of any level of significant change.

4.6. In all scenarios apart from Full Flow Profile and Tidal Flow Change, there should be the option of either:

- Leaving the 2015 model as it is, without any changes to the flows, but just making sure that this exercise of cordoning and checking against multiple datasets is documented and carried forwards as a consideration in case of future issues; or,
- Making minor adjustments to the flows, either globally or locally, leading to the ability to effectively present the model as a base year fit for the purpose of 2019-based option testing.

## 5. Model Refinement & Re-Calibration:

- 5.1. Although it is planned that the model extents be reduced, and the model flows be either shown to be comparable or factored and adjusted to be comparable to an up to date traffic survey dataset, the aim is that there will not be much else which will need changing.
- 5.2. If there have been physical changes (i.e. new lanes or junction arrangements) which are now built and fully operational within the relevant section of the A49 corridor (or were built and operational within the new agreed area of interest when the 2019 surveys were carried out) then the inclusion of these needs to be considered.
- 5.3. There may also be minor, performance based, or primarily cosmetic based improvements which would add to the overall usability and/ or functionality of the updated model, whilst being shown to not impact on previously achieved performance indicators.
- 5.4. If the model has proven initially to perform in a demonstrably similar manner, in an updated version of VISSIM, one of the key changes would be to place the model under scenario management. This tool allows a greater level of efficiency and transparency to be achieved, with all peaks and scenarios sitting within one VISSIM model, and any model changes being tracked and auditable through the use of modification files.

## 6. Future Year Option & Mitigation Testing

### Proposed Scenarios for Testing

- 6.1. If the methodology included within this report is agreed and the work to cordon the base year models and prove that they are fit for purpose is successful, the following scenarios are proposed to be individually tested and analysed, using the resultant model of the included process as a base:
  - 2022 Do Minimum – Opening Year, No development
  - 2022 Do Something – (Opening Year, 120 Dwellings) – Access Strategy Option A
  - 2022 Do Something – (Opening Year, 120 Dwellings) – Access Strategy Option B
  - 2022 Do Something – (Opening Year, Full Development) – Access Strategy Option A
  - 2022 Do Something – (Opening Year, Full Development) – Access Strategy Option B
  - 2027 Do Something – (Opening Year +5, No Development) – Access Strategy Option A
  - 2027 Do Something – (Opening Year +5, No Development) – Access Strategy Option B
  - 2027 Do Something – (Opening Year +5, 600 Dwellings + Local Centre) – Access Strategy Option A
  - 2027 Do Something – (Opening Year +5, 600 Dwellings + Local Centre) – Access Strategy Option B
  - 2032 Do Something – (Opening Year +10, No Development) – Access Strategy Option A
  - 2032 Do Something – (Opening Year +10, No Development) – Access Strategy Option B

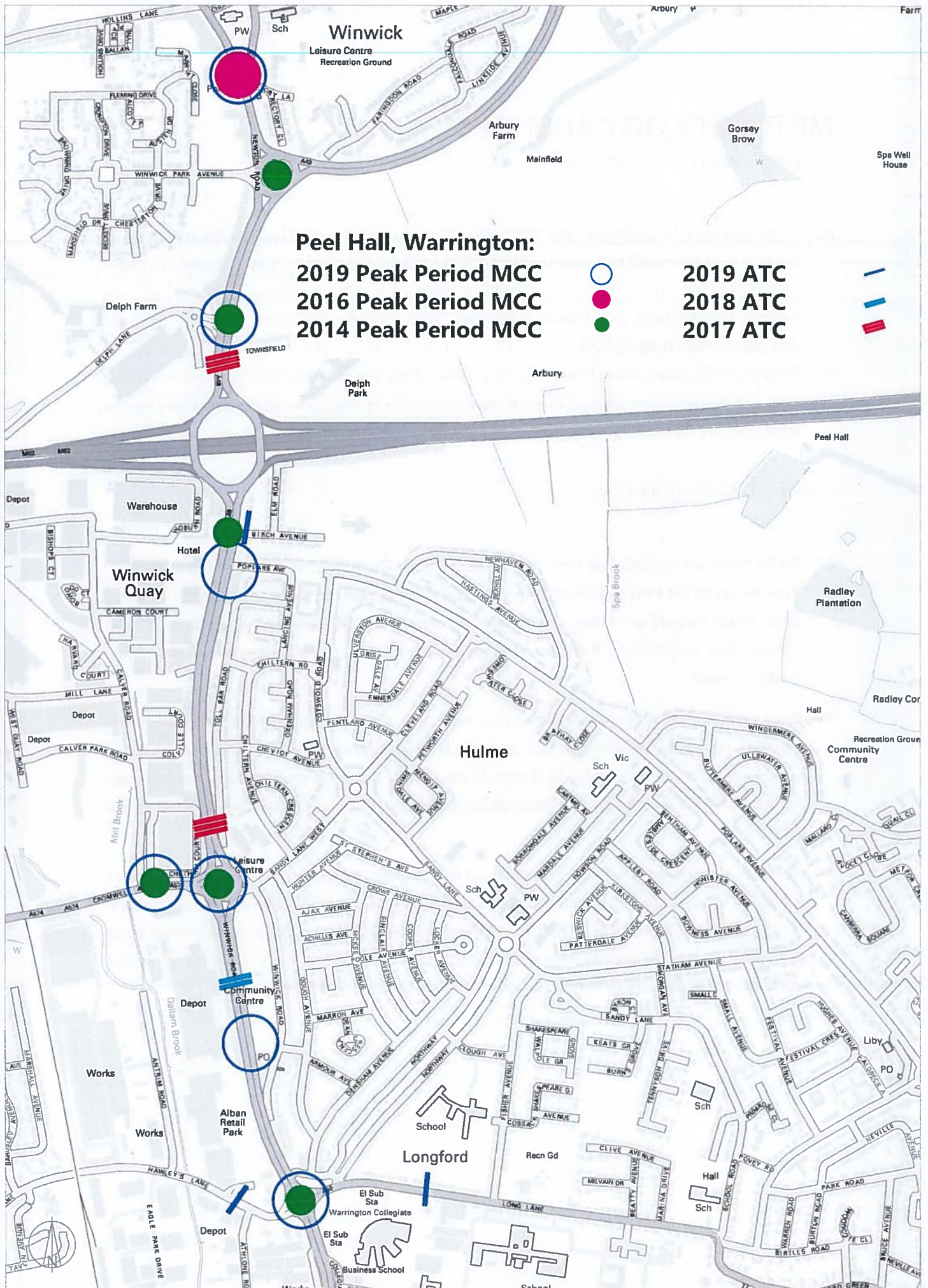
- 2032 Do Something – (Opening Year +10, Full Development) – Access Strategy Option A
  - 2032 Do Something – (Opening Year +10, Full Development) – Access Strategy Option B
- 6.2. Traffic flows will be cordoned from Warrington Borough Council's SATURN model (WMMTM16) recently run for the Peel hall development profile and future year scenarios and provided as hourly data. These outputs will then be processed to create per vehicle type flows in the form of excel network flow diagrams by the team at Highgate Transportation. Both sets of data will be made available to the modelling team.
- 6.3. Once received, these network flow diagrams will be simply converted to network origin destination data and entered into the VISSIM model modification files to create the static routing and vehicle input changes for each flow scenario.
- 6.4. The following committed mitigation measures will also be included as individual modification files, allowing them to be easily added and combined to each relevant test scenario at a later point (2027 and 2032 scenarios):
- M62 J9 (eastbound off-slip works)
  - Delph Lane/B&Q signalised junction improvement scheme
  - Winwick Roundabout mitigation
  - Junction 9 Retail Park junction modifications
- 6.5. Placing the entire project under the scenario manager tool allows each scenario to be separately 'constructed' using the modification files detailed in the previous bullet lists. This allows the combination of flow sets and combinations of mitigation/ network changes to originate from the same modification files, making checking and editing efficient and simpler to track.
- 6.6. Any tweaks to signal timings and/ or vehicle behaviour is then also recorded using per scenario modification files. This keeps the modelling process transparent, throughout all stages of modelling and analysis.

## 7. Summary

- 7.1. We seek WBC and Highways England to agree the above methodology and provide constructive comments where necessary.

**Peel Hall, Warrington:**  
**2019 Peak Period MCC**  
**2016 Peak Period MCC**  
**2014 Peak Period MCC**

- 2019 ATC
- 2018 ATC
- 2017 ATC



# METHODOLOGY ADENDUM

## ORIGINAL METHODOLOGY TEXT

- 6.2. Traffic flows will be cordoned from Warrington Borough Council's SATURN model (WMMTM16) recently run for the Peel hall development profile and future year scenarios and provided as hourly data. These outputs will then be processed to create per vehicle type flows in the form of excel network flow diagrams by the team at Highgate Transportation. Both sets of data will be made available to the modelling team.
- 6.3. Once received, these network flow diagrams will be simply converted to network origin destination data and entered into the VISSIM model modification files to create the static routing and vehicle input changes for each flow scenario.

## AMENDED METHODOLOGY

- 6.2. Traffic flows will be cordoned from Warrington Borough Council's SATURN model (WMMTM16) recently run for the Peel hall development profile and future year scenarios and provided as hourly data. These outputs were then processed to create per vehicle type flows in the form of excel network flow diagrams by the team at Highgate Transportation, before being provided to the modelling team.
- 6.3. Once received, these network flow diagrams were then converted into per origin-destination pair actual and percentage difference matrices. In the first instance, the percentage difference matrices will be applied to the actual flow O-D pairs in the VISSIM model, in order to apply the same per route percentage growth to the validated base year VISSIM flows as found in the SATURN model outputs.
- 6.4. However, sense-checks will also be carried out to all adjustments. There is the possibility that, as a result of large differences between individual link input flows in the SATURN and VISSIM models, a sensible percentage in the SATURN model between two relatively small numbers, could result in a large percentage change between two much larger numbers in the VISSIM model. In this instance, actual differences will be applied rather than percentage differences.



# Appendix SCG/V2

VISSIM Study Area

10075  
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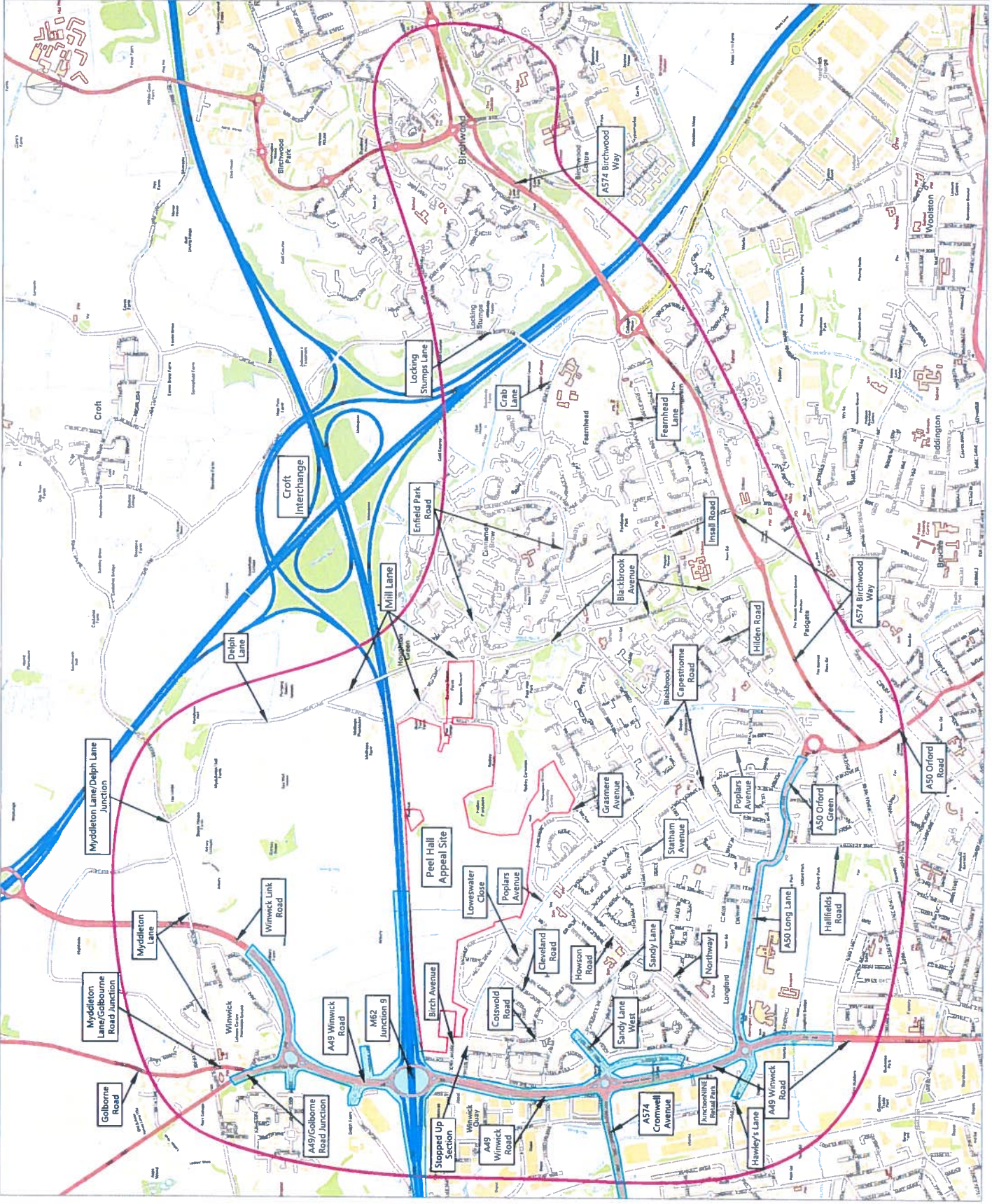


Wider Peel Hall Study Area  
VISSIM Study Area

REV	REVISION	DATE

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CLIENT	SATNAM MILLENNIUM LTD		
PROJECT NUMBER	1901	REVISION NUMBER	102
SCALE	NOT TO SCALE		

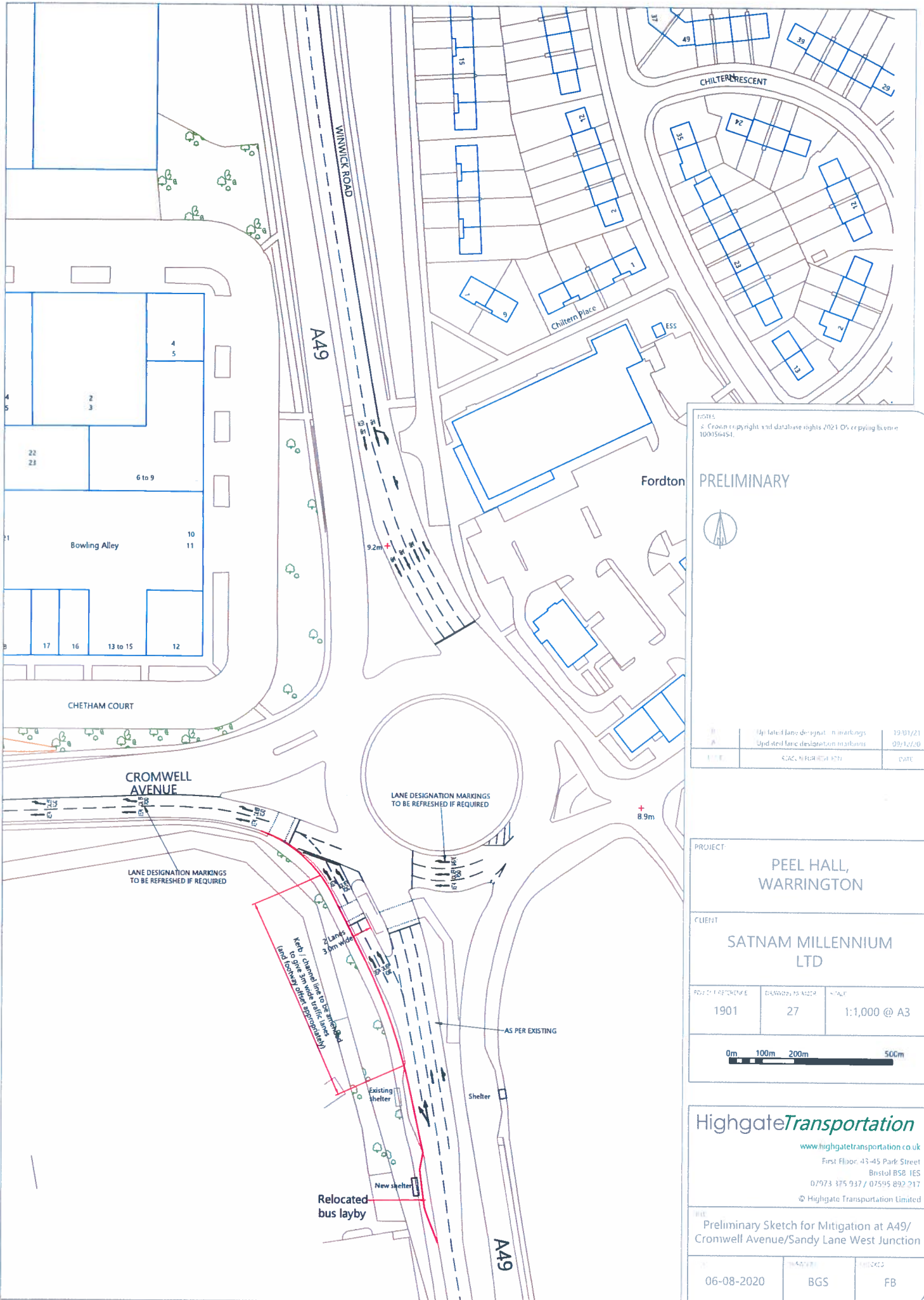
<b>HighgateTransportation</b> <a href="http://www.highgatetransportation.co.uk">www.highgatetransportation.co.uk</a> First Floor, 43-45 Park Street Bristol BS1 5NL 0117 934 9121 © Highgate Transportation Limited	
VISSIM STUDY AREA	
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# Appendix SCG/V3

## Mitigation Measures



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**PRELIMINARY**

19/07/21  
 09/12/20

DATE	SCALE / REVISION	DATE
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PROJECT  
**PEEL HALL,  
 WARRINGTON**

CLIENT  
**SATNAM MILLENNIUM LTD**

PROJECT REFERENCE	DRAWING NUMBER	SCALE
1901	27	1:1,000 @ A3

0m 100m 200m 500m

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TITLE  
 Preliminary Sketch for Mitigation at A49/  
 Cromwell Avenue/Sandy Lane West Junction

DATE	DESIGNED BY	DRAWN BY
06-08-2020	BGS	FB

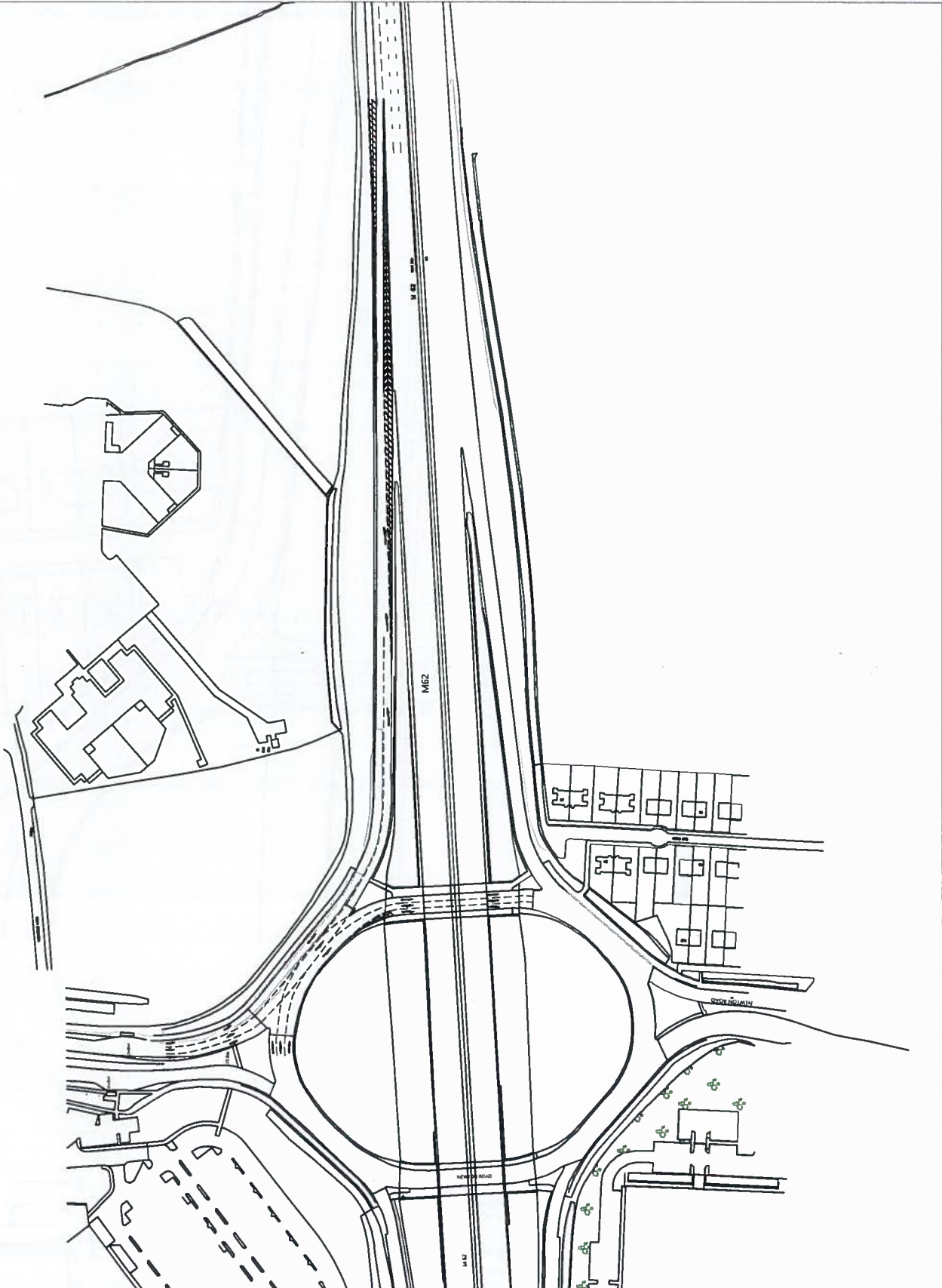


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**PRELIMINARY**

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**CLIENT**  
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LTD

**PROJECT REFERENCE**  
1901

**DRAWING NUMBER**  
28

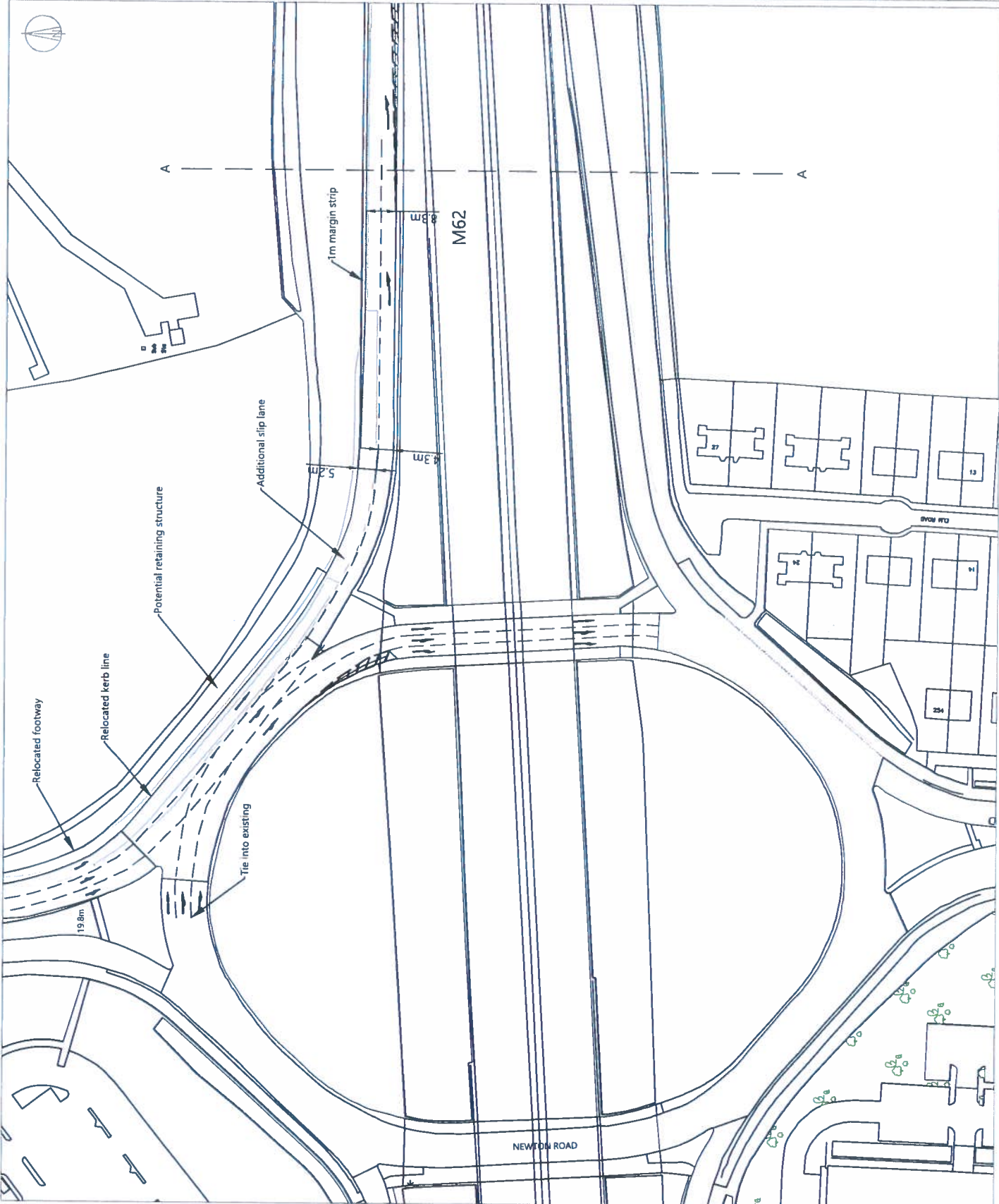
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**SHEET**  
SHEET 1 OF 3

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**M62 J9 POTENTIAL E/BOUND ON-SLIP  
IMPROVEMENTS - OVERVIEW**

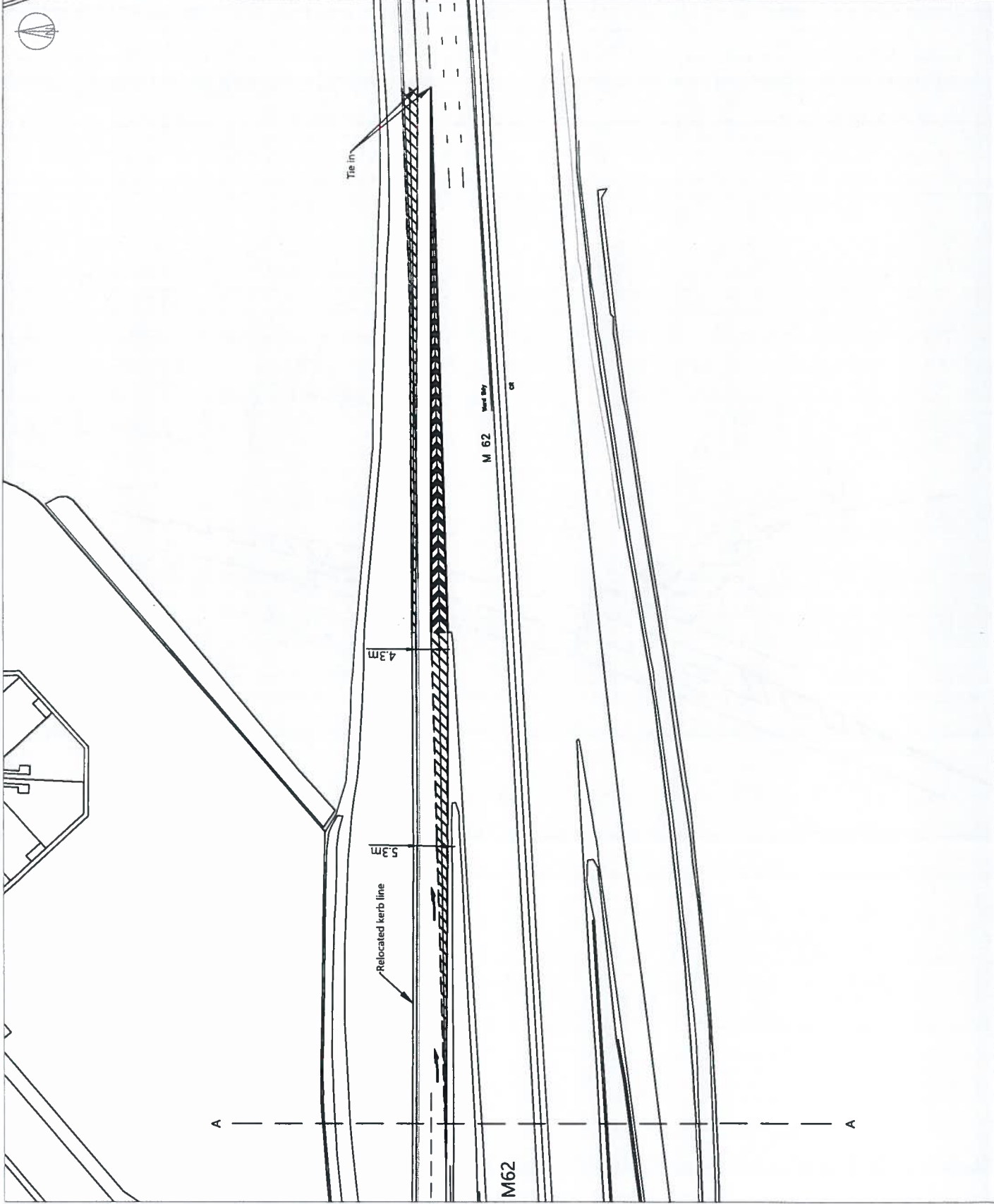
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 North arrow indicative.

PRELIMINARY

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TITLE  
 PROPOSED A49 / GOLBOURNE ROAD  
 JUNCTION IMPROVEMENTS

DATE	SUBMITTER	CHECKED
04/03/20	BGS	FB

