HighgateTransportation

Land at Peel Hall, Warrington
Reopened Inquiry

Supplementary Proof of Evidence
VISSIM Matters

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On behalf of
Satnam Millennium Limited
(APP/M0655/W/17/3178530)

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Contents

List of Figures

Appendices

1.0 Introduction

1.1 My name is David Tighe, I am a Director of Highgate Transportation and my qualifications are BSc, CEng, MICE, and DipTpEng. I am a Chartered Engineer and a specialist Transportation Member of the Institution of Civil Engineers. I also hold a post graduate qualification in Transportation Engineering.

1.2 This supplementary proof of evidence relates only to VISSIM matters. It should be read in conjunction with the proof of evidence provided by Luke Best of Modelling Group, which considers in detail the VISSIM modelling that has been carried out and why it can be relied on.

1.3 My evidence considers the VISSIM timeline and provides a context and overview of the modelling work carried out. Care has been taken to ensure that there is no overlapping of evidence between myself and Luke Best. For this session of the inquiry a Statement of Common Ground on VISSIM matters is being prepared.

1.4 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 so that it can be relied upon to show that the traffic impact of the appeal proposals will not be severe or have adverse impacts on highway safety.

1.5 This model was initially requested by Warrington Borough Council (the Council) for testing the Access Strategy Option B (direct access onto the A49), not Option A. This was in the context of a second planning application i.e. before the quashing of the 2018 appeal decision.

1.6 The VISSIM methodology was agreed with the Council's highway officers and Highways England in November 2019 and that the modelling would be carried out by the Appellant's modelling consultants. The modelling would then be provided to the Council and Highways England for auditing by their respective consultants. It will be recalled that the future year VISSIM models are based on SATURN data from the Council's WMMTM16.

1.7 The Peel Hall study area is shown on the plan contained at **Appendix DT/V1**, including the extent of the modelled VISSIM corridor. The A49 corridor is approximately 3.5 kilometres long and includes the following junctions:

i. A49/Golborne Road
ii. A49/Winwick Link Road signalised roundabout
iii. Delph Lane (B&Q) signal 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. Junction 9 Retail Park signalised junction with the A49
vii. A50/A49 signalised junction

1.8 The mitigation package for the A49 corridor proposed by the Appellant 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
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

1.9 The agreed committed development schemes to be included in the Peel Hall modelling was set out by the Council as:

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

1.10 The agreed committed development mitigation schemes to be included in the Peel Hall modelling 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

1.11 Typically, the approach in most circumstances would be to prepare and submit the base model and go through an iterative audit process until it is considered acceptable before progressing to modelling future year scenarios.

1.12 However, although the original opening date of this inquiry was 9th June 2020 this was only set on 13th February 2020 with dates as early as March 2020 being considered.

1.13 Therefore, at the time the VISSIM modelling commenced there was the possibility of a March or April 2020 inquiry and, given the involvement of the Council and Highways England, there was uncertainty regarding how long the audit process would take. As a result, following the initial base model issue and receipt of auditor comments, it was necessary to prepare future year modelling prior to the base model being formally accepted by the Council and Highways England.

1.14 Given that the methodology was agreed, I would have expected this modelling work to have taken around 12 weeks to be accepted.

1.15 However, the VISSIM model became intricate and highly complex as the modelling progressed (and more auditor comments received) so that each iteration took longer to complete, eventually taking several weeks to carry out the iterations necessary for the future year scenarios to provide a version of the model suitable for submission.

1.16 This evidence follows the adjournment of the inquiry in September 2020 when it was clear that despite the expectation and best efforts that the VISSIM modelling would have been accepted by the Council and Highways England before the opening of the inquiry, there were still matters to be resolved.

1.17 It should be noted that the conclusions of the highways evidence have not materially changed to that set out in the Transport Assessment (January 2018) and Transport Assessment Addendum (March 2020), Core Documents APN101 and APN120 respectively. To put my evidence in context:

i. Locations for mitigation generally the same
ii. Mitigation proposed generally the same
iii. For a development of 1,200 dwellings, the impact is small and concentrated at only a few locations i.e. Sandy Lane West, Long Lane
iv. The public transport strategy is agreed
v. WMMTM16 modelling is agreed
vi. Development flows are agreed

1.18 Since September 2020 there have been further modelling runs and auditor comments and the situation at the time of writing this evidence can be described as the base and future years models are agreed as acceptable. However, there is disagreement in respect of how the future year modelling output should be interpreted, and this is set out in detail in the evidence of Luke Best.

1.19 My evidence confirms that for the majority of the modelled VISSIM network the proposed mitigation measures either allow maintained levels of performance or produce significant improvements in terms of journey times and traffic volumes.

1.20 My evidence is structured as follows:

Section 2.0 – The Peel Hall Development in the Context of Warrington

Section 3.0 – VISSIM Timeline and Summary of Modelling Work Carried Out

Section 4.0 – Modelling Overview and Context

Section 5.0 – Conclusion

2.0 The Peel Hall Development in the Context of Warrington

2.1 Warrington is typical of towns and cities all over the country that must cope with huge pressure of development for social interest (housing and economic development). Much of Warrington's highway network is constrained, for example, bridge links over the River Mersey bisecting the town centre, and rail lines elsewhere.

2.2 As set out in the Council's LTP4, Warrington is a town with a background of 'continued economic success' despite 'high car dependency and congestion'. From the 2011 Census data it can be seen that, with 80% of commuting trips being made by car, Warrington has higher than average car modal share (see Figure 3.1 of LTP4, a copy of which is provided in **Appendix DT/V2**).

2.3 The Council's WMMTM16 was commissioned in order to support the emerging Local Plan. This modelling included for a Peel Hall allocation of 1,200 dwellings as well as strategic sites in South Warrington. WMMTM16 did not highlight any significant issues with the Peel Hall development traffic.

2.4 It is also noted from LTP4 that the Council aim to achieve modal change over the life of the plan with a reduction in car use of 14% within Warrington (see LTP 5.4 also provided in **Appendix DT/V2**). The aim being to alleviate local congestion and promote healthier lifestyles.

2.5 In Warrington, the reality is that the traffic flows are tidal e.g. heavier flow travelling into Warrington southbound in the morning, and this compounds the high levels of congestion to the south of the A49 VISSIM study area and the town centre. As congestion increases this typically results in peak spreading, whereby the traditional peak hour is extended as a result of latent demand.

2.6 Given this, it is clear that the existing highway network to the south of the VISSIM study area experiences congestion that impacts on the model forecasting for the A49 corridor study area. Therefore, the model is bound to experience blocking back from the area to the south, as this reflects reality. We have an agreed study area and all study areas have an 'edge'.

2.7 The A49 is an important corridor and forms part of the strategic road network. Given this, the Council are having to balance competing demands to ensure the most efficient operation of the main network and that potential consequential impacts onto the M62 motorway are avoided.

2.8 The assessment of the Peel Hall development impact has covered a wide study area (see plan contained at **Appendix DT/V1**), using the Council's WMMTM16 to forecast future traffic as well as development flows. These link flows are agreed with the Council and Highways England.

2.9 I note from the evidence of Luke Best (paragraph 3.41) when he is considering traffic flows onto Sandy Lane West, that the majority of vehicles in the area to the south of the Peel Hall site are through traffic i.e. rat running traffic, as set out in my main proof of evidence (paragraph 2.3). It can be noted in TN/25/B (LB Appendix L/4) that traffic emanating from the residential area to the immediate south of the appeal site travelling to and along Sandy Lane West accounts for only up to around a maximum of 1.5 vehicles per minute in the busiest peak hour.

2.10 The VISSIM model was requested by the Council to test the A49 corridor within the study area (see also the plan contained at **Appendix DT/V1**). VISSIM microsimulation model provides more detail than the Council's strategic WMMTM16 Saturn model, as well as providing junction-to-junction interaction.

2.11 The Council's concerns relate to a very small number of locations within the VISSIM study area, two links (Sandy Lane West and Long Lane) that are side roads to the A49. As demonstrated in Luke Best's evidence, the impact of the proposed 1,200 dwellings is minimal on the network as a whole and the concerns raised by the Council are very modest e.g. up to only a 46 second increase to delay in the AM peak over the 1.5km length of Long Lane and up to only a 3 second increase to delay on Sandy Lane West over a length of 300m in 2032 (Table 3.5 of Luke Best's evidence).

2.12 It should be noted that the Peel Hall modelling assessment work does not take account of the reductions in trips by car that will arise from the strategy set out in LTP4 to increase walking, cycling and public transport trips.

2.13 Furthermore, that the modelling should be considered very robust, especially at junctions operating MOVA where on the ground in reality the signal operation will provide gains (up to 10%) over that modelled.

2.14 The modelling and results prove that the network can adequately accommodate the proposed levels of growth and Peel Hall development traffic through signal optimisation and proposed mitigation.

3.0 VISSIM Timeline and Summary of Modelling Work Carried Out

3.1 The first iteration of the base model was issued on 10th January 2020 and the first of the future years package with an updated base model on 23rd March 2020 as part of the Transport Assessment Addendum.

3.2 After several iterations the base model was accepted by the Council (13th November 2020) and Highways England (2nd November 2020).

3.3 Following the acceptance of the base model, the final future years modelling was carried out and issued 2nd December 2020. The subsequent response from the two auditor teams means that the position is that the VISSIM modelling has been accepted as technically sound to assess the impact of the Peel Hall development, but that some issues remain with regard to interpretation of the data, for example signal optimisation and latent demand, where latent demand is vehicles not entering the modelled network within the defined peak hour, resulting in peak spreading. This is considered in detail in the evidence of Luke Best.

3.4 At the time the modelling commenced and given the extensive information available and that the methodology was agreed, I expected that it would have taken around 12 weeks to have submitted a complete modelling package, received auditor comments and be accepted.

3.5 It was expected that the WMTMM16 information from the Council would be made available in a usable form from September 2019 to allow the future year modelling to progress. In the event, this data was not made available in a useable form until mid-December 2019.

3.6 However, because of the level of detail required by the Council, Highways England and their auditors, the VISSIM modelling evolved into a much larger element of the transport assessment work. As a result, the VISSIM process has overshadowed the highways related evidence that was ready to be presented at the September 2020 inquiry, most of which had been agreed with the Council and Highways England.

3.7 A table of VISSIM model submissions and dates of auditor responses is provided at **Appendix DT/V3**, in Technical Note TN/31, that provides a detailed chronology of the VISSIM modelling process.

3.8 In summary, whilst the process of model development has clearly been longer and more arduous than originally anticipated, it is also clear that since the adjournment of the inquiry in September 2020 all parties have made best use of this subsequent period to ensure that the modelling package is suitable to test development impact.

4.0 Modelling Overview and Context

4.1 The modelling results and the impact of the Peel Hall development traffic and mitigation arising is considered in detail in the evidence of Luke Best.

4.2 This section of my evidence provides an overview of the modelling output and replaces paragraphs 7.3 to 7.6 of my main proof of evidence (August 2020).

4.3 In summary, our model findings are that, for the majority of the modelled VISSIM network (see plan contained in **Appendix DT/V1**), the proposed mitigation measures either allow maintained levels of performance or produce significant improvements when compared against the corresponding links in the reference case models in terms of journey times and traffic volumes.

Development Impact

4.4 As the future years modelling indicated in August/early September 2020, there are two noticeable areas where levels of delay are apparent in the Do Something scenarios: Sandy Lane West and Long Lane. As set out in **paragraph 2.11** this is a minimal delay on Long Lane when taking into account the length of the link, with no significant change to delay on Sandy Lane West westbound in 2032.

Sandy Lane West

4.5 In terms of development trips on Sandy Lane West from the Council's WMMTM16, these were forecast in the agreed strategic model to be 81 and 85 in the AM and PM peak hours respectively westbound in 2022 (i.e. just over one development-related vehicle per minute), and 104 and 89 the AM and PM peak hours respectively westbound in 2032 (i.e. around 1.5 development-related vehicles per minute). See Appendix 13 of the Transport Assessment Addendum (March 2020) Core Document APP120.

4.6 Furthermore, it can be recalled that WMMTM16 did not forecast development impact at this A49/ Cromwell Avenue/ Sandy Lane West junction (see Appendix 5 Transport Assessment Addendum (March 2020), Core Document APN120 and Appendix DT/21 of my August 2020 evidence). This is evidenced in the WMMTM16 outputs for link delay, node delay and node volume over capacity plots (provided in **Appendix DT/V4** for ease of reference) that can be summarised as:

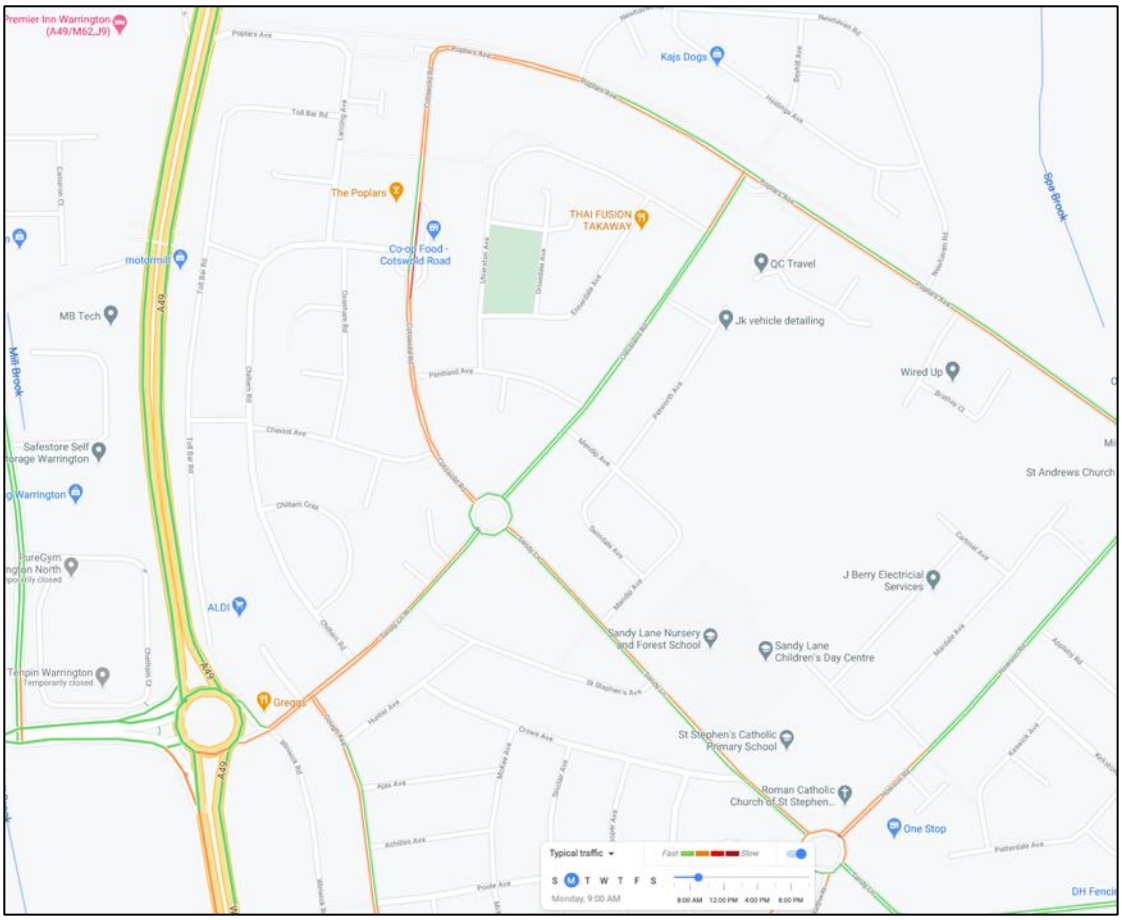
i. No junctions on the A49 corridor are flagged as having 5%+ development impact
ii. The node delay diagrams for AM 2032 show no difference between Do Minimum and Do Something in area of the VISSIM corridor
iii. The node delay diagrams for PM 2032 show no difference between Do Minimum and Do Something in area of the VISSIM corridor
iv. Node volume over capacity AM 2032 plots show a difference between Do Minimum and Do Something at the A50/A49 junction (volume over capacity 85% to 95%)
v. Node volume over capacity PM 2032 plots show a difference between Do Minimum and Do Something at Junction NINE retail park (volume over capacity 75% to 85%) - this increase is acceptable
vi. Link delay plots for AM 2032 show a difference between Do Minimum and Do Something of +30 seconds at the M62 Junction 9 eastbound off-slip; +40 seconds Golborne Road; +3 seconds Cromwell Avenue – this is not significant
vii. Link delay plots for PM 2032 show a difference between Do Minimum and Do Something of +20 seconds M62 Junction 9 eastbound off-slip; +45 seconds Cromwell Avenue – again, this is not significant

4.7 Therefore, it is clear that the Council's strategic WMMTM16 model did not predict any impact from the development traffic on Sandy Lane West.

4.8 With regard to the impact of the modelled queue lengths at Sandy Lane West and the indication that these are forecast to be longer than the link length of 300m, it is clear that such traffic conditions do occur at present. From the empirical evidence (Google Traffic Map extracts at **Figure 4.1** and Core Document APP36 '030419') queueing and slow moving traffic on Sandy Lane West stretches back to beyond the roundabout at the eastern extent, onto the adjoining arms - Cotswold Road, Cleveland Road and Sandy Lane. Luke Best concurs in his evidence (paragraphs 3.50 – 3.51) that the local area is clearly experiencing these long queue lengths now, with over 1,100 metres of aggregate queuing traffic on these approach arms.

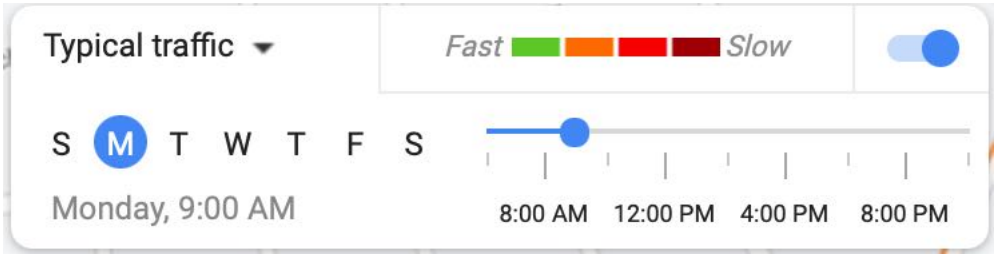
4.9 This is especially apparent from the data in Luke Best's evidence on non-optimised signal timings for the A49/ Cromwell Avenue/ Sandy Lane West junction (his paragraph 3.48 and Figures 6 and 7) regarding queue lengths on Sandy Lane West.

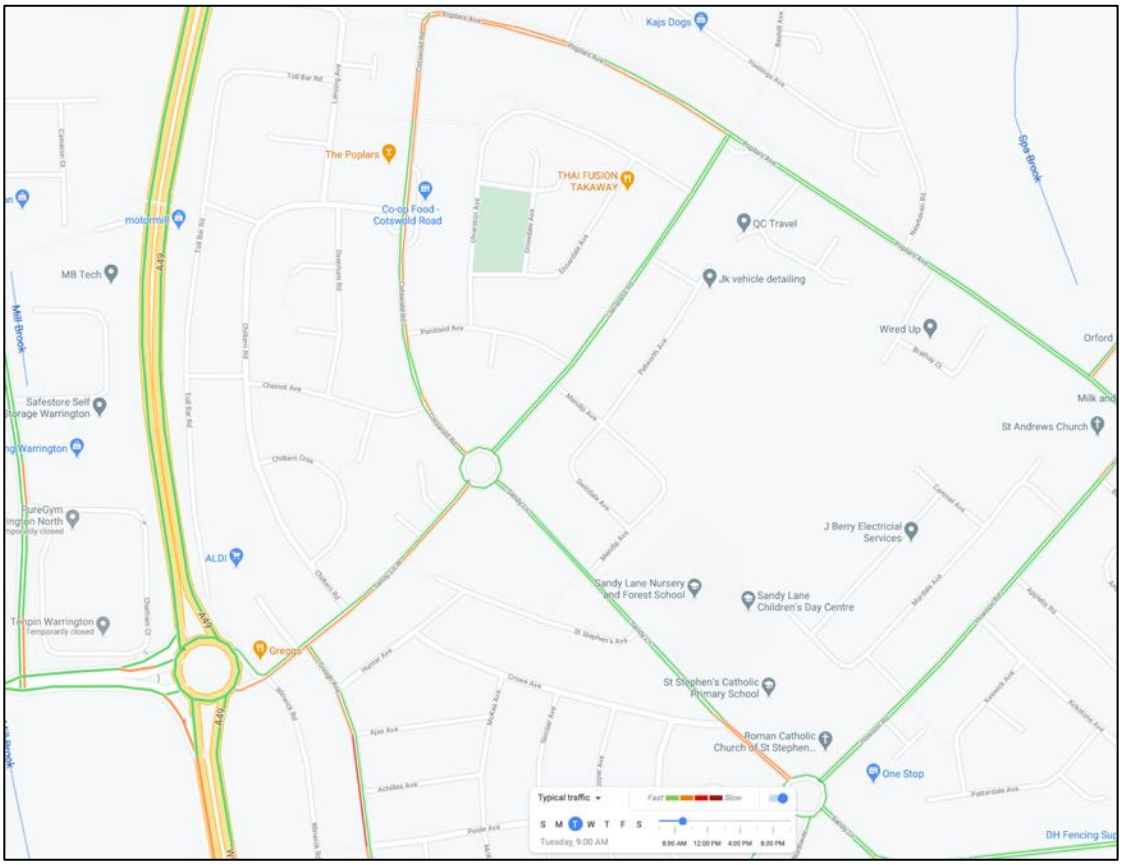
Figure 4.1 – Existing traffic conditions (a-e)



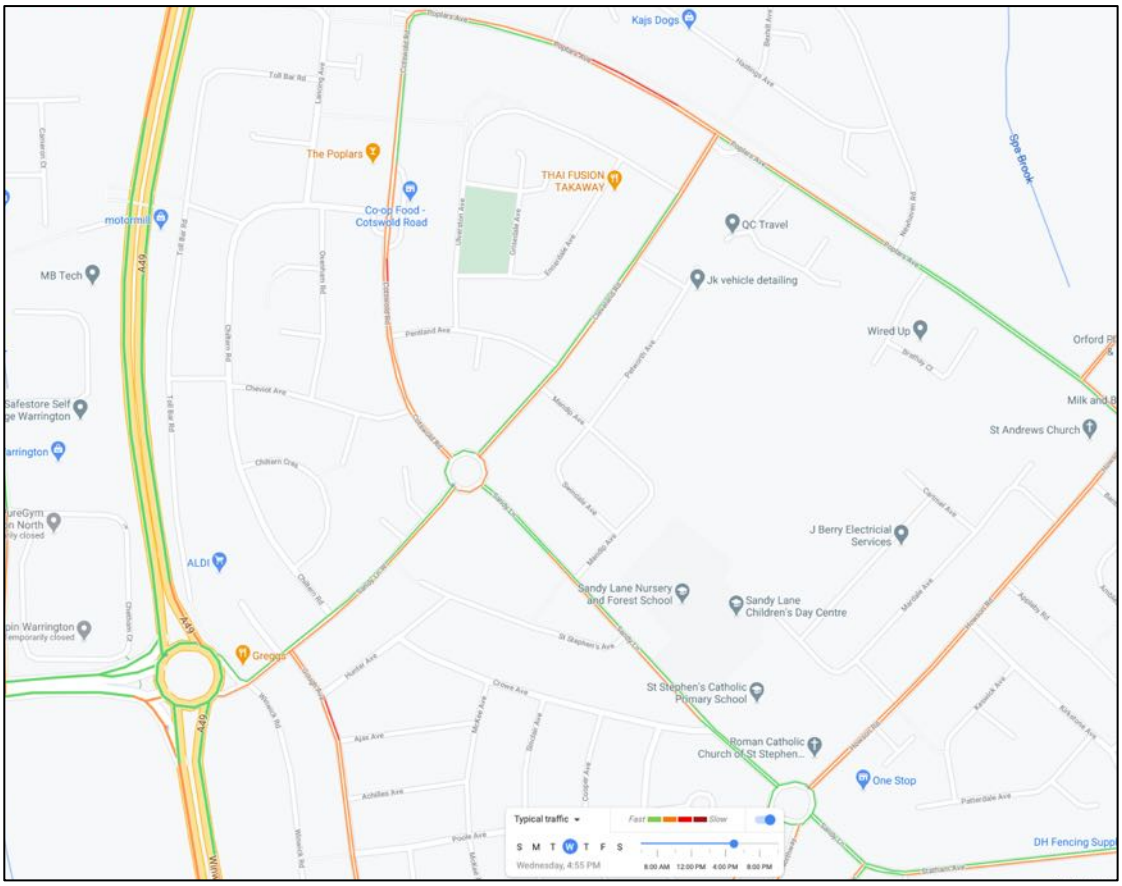
a) Monday 9am

Key of Google Traffic Map for reference:

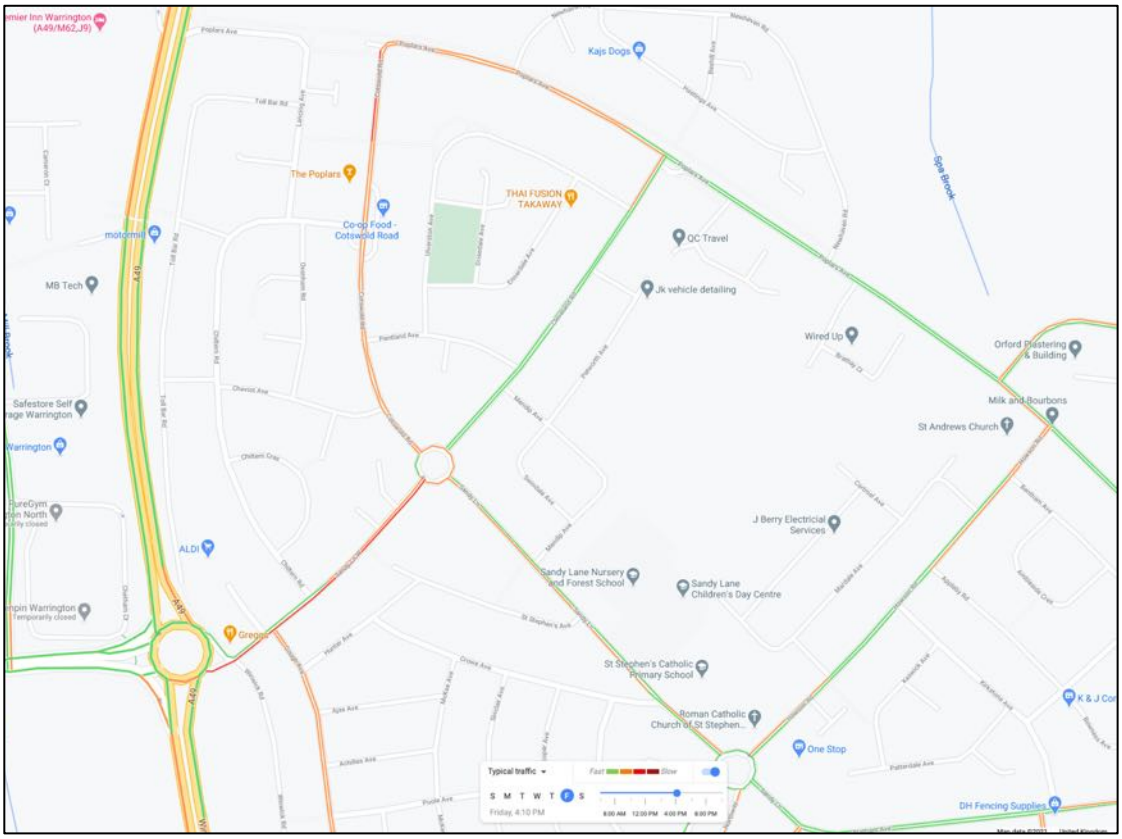




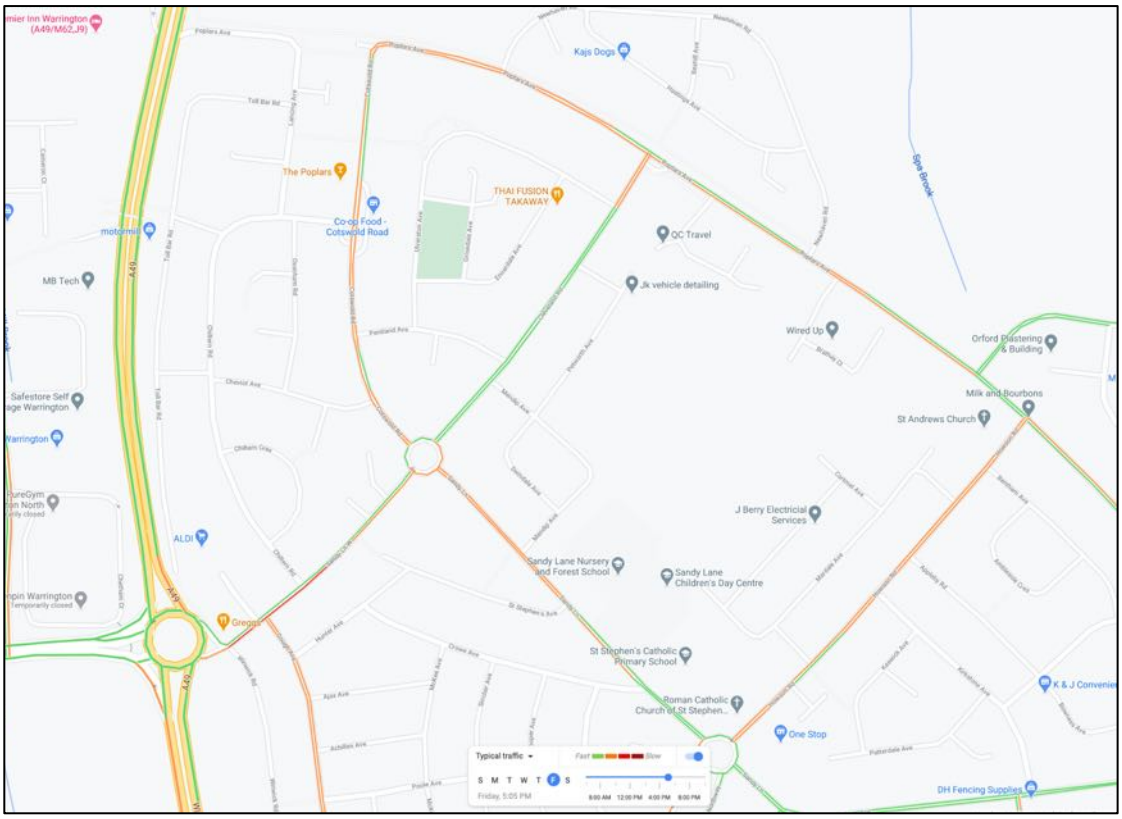
b) Tuesday 9am



c) Wednesday 5pm



d) Friday 4pm



e) Friday 5pm

4.10 Therefore, I do not consider that the queue lengths shown in the modelling represent development impact that cannot be mitigated as suggested by WSP in their TN/12 (Core Document APP35). Instead, I consider that this is a non-point, based on an artificial straight-line extension to Sandy Lane West within the VISSIM model i.e. no modelled detail within VISSIM of the roundabout or the three arms radiating from it as Sandy Lane West formed the edge of the agreed VISSIM study area. This issue is covered in detail in Luke Best's evidence paragraphs 4.38 to 4.43.

4.11 In terms of the implications of slow moving traffic and/or queue lengths on buses along Cotswold Road and Sandy Lane (see **Figure 4.2** for bus route diagram taken from Warrington's Own Buses), this will be similar to the present and pre-pandemic recent past. The development trips heading to Sandy Lane West are distributed by WMMTM16 across the three approach arms of Cotswold Road, Cleveland Road and Sandy Lane at around one vehicle every two minutes (see Appendix 13 of the Transport Assessment Addendum (March 2020) Core Document APP120).

Key:

Bus Stops  Route 21 Route 20

Figure 4.2 – Bus routes

4.12 I therefore consider, when viewed with what is set out at **paragraph 2.11**, that development traffic will not have a noticeable impact on buses in this location above that currently and previously experienced pre-pandemic.

4.13 I note from the 2013 consent (ref: 2012/20795) for the redevelopment of the former Fortron leisure centre site, which includes an Aldi and family restaurant/pub (Stonemill carvery) and takes access from Sandy Lane West within close proximity to the A49 junction (less than 65m) that the additional highway officer's report (Core Document APP40) "*As can be seen from Table 3 above, the proposed development is expected to result in an approximate increase in traffic levels of approximately 11% In the AM peak hour and 290% in the PM peak hour*".

4.14 Furthermore, it can be noted that the applicant's approach to the modelling work for the 2012 scheme at that time was to optimise the A49/ Cromwell Avenue/ Sandy Lane West signalised junction, to demonstrate that the subsequent increases to queueing and delay arising from the PM peak hour traffic increases could be significantly minimised/ brought back to a situation of nil-detriment.

4.15 Given this approach to signal optimisation and acknowledgement of the benefits that it brings, this enabled the highway officer to conclude that even though the development would lead to significant increases in queuing and delay on Sandy Lane West and the A49, this was a situation that was acceptable and hence they raised no highway objection.

4.16 It should also be acknowledged, when considering the appeal scheme, that a foodstore and family pub/restaurant will be provided as part of the proposed local centre. Therefore, many of the existing local residents in the area south of the appeal site can be expected divert from the local centre off Sandy Lane West (Aldi, Stonemill carvery, etc). This will not have been taken account of in the strategic modelling and therefore will result in less westbound traffic to and along Sandy Lane West from the existing residential area. Thereby elevating some of the pressure on this part of the network as a result of the Peel Hall development.

A50 Long Lane

4.17 In terms of development trips on the A50 Long Lane, these were forecast in the strategic WMMTM16 model to be 101 and 75 in the AM and PM peak hours respectively westbound in 2022 and 2032 (i.e. less than two development vehicles per minute – see Appendix 13 of Transport Assessment Addendum (March 2020) Core Document APP120).

4.18 It can be noted that the Peel Hall development has less than a 5% impact at this junction of the A49/ A50/ Hawleys Lane in terms of vehicle numbers (Transport Assessment Addendum (March 2020), Core Documents APN120, Appendix 5 and Appendix 13).

4.19 The Transport Assessment Addendum shows that development-related vehicles will have up to around a 3% impact across all arms of this junction, with development traffic forecast to be within the daily variation of flow on each respective arm (see Appendix 21 of Transport Assessment Addendum (March 2020) Core Document APP120).

4.20 In any event, the Appellant is offering to provide a contribution to MOVA at this signal junction, as set out below. It should be noted that it is not for the development to solve all pre-existing highway issues.

Mitigation

4.21 I note from the evidence of Luke Best that the assessment of impact on a busy and extended network calls for a pragmatic and balanced approach to modelling outputs. It is considered that the following proposed mitigation measures (**Appendix DT/V5**) are appropriate to be offered by the developer to assist with offsetting development impact and improving the capacity of the local road network:

i. A49/A50/Hawley's Lane contribution towards MOVA
ii. A49/Golborne Road ghost right turn works
iii. M4 Mitigation package:
    - A49/Cromwell Avenue/Sandy lane West improvement works to northbound left-turn lane (extension and provision of a second left-turn lane)
    - A49/M62 Junction 9 Eastbound on-slip widening and associated works

4.22 When Peel Hall development traffic is added to the network, there is of course an impact on levels of congestion. However, the M4 mitigation measures contribute towards the creation of a network with the ability to produce consistent network performance improvements in each sequential future year scenario, particularly in the evening peak.

4.23 The modelling strategy is to minimise delay where possible. Where delay is not fully mitigated against, effects are able to be kept localised and controlled through a network wide optimisation strategy. The focus has been to ensure the smooth running of the primary A49 corridor, in both peaks, whilst also guaranteeing minimum impact for traffic on, as well as entering and exiting, the strategic M62 mainline route. This strategy creates the most benefit for the most people.

A49/ Cromwell Avenue/ Sandy Lane West – RSA1

4.24 It is proposed to provide a second left-turn lane on the A49 northbound to Cromwell Avenue and to lengthen the existing and proposed left-turn lanes, with associated works.

4.25 I now provide more detail on the mitigation proposed, the existing accident records and the supporting Road Safety Audit Stage 1.

4.26 In terms of the accident records over this stretch of the A49 left-turn lane and Cromwell Avenue up until the junction with Calver Road, it can be summarised from a recent review of data from Crashmap 2014-2020 (provided at **Appendix DT/V6**) that:

i. Seven recorded Personal Injury Accidents (PIA)
ii. All classified as 'slight'
iii. All nose-tail type PIA, no 'merge/side-swipe' type PIA recorded on the link reviewed
iv. No PIA recorded involved pedestrians
v. One PIA involved a child cyclist on the controlled crossing
vi. One PIA involved an adult cyclist on Cromwell Avenue
vii. One PIA involved a LGV and a motorcycle

4.27 Therefore, it can be concluded that there is no recorded accident pattern involving merge/side-swipe type PIA in this location.

4.28 Since the technical approval of the future years modelling in January 2021 a Road Safety Audit Stage 1 was commissioned by the Appellant to provide confidence to the Inspector that the mitigation scheme proposed is acceptable and safe for all users in highway terms.

4.29 We understand that the Council's concerns relate to the alleged risk associated with increasing merge (lane change) behaviour. This is addressed in detail in Luke Best's evidence (paragraphs 4.9 to 4.13).

4.30 The preliminary proposed mitigation measures are set out on plan HTp/1901/27/B, contained in (**Appendix DT/V5**), and the Road Safety Audit Stage 1 report and accompanying Designer's Response are provided for reference in **Appendix DT/V7**. From this it can therefore be summarised that our mitigation will take on board the recommendations at detailed design stage and that therefore the mitigation is acceptable.

VISSIM Video Extracts

4.31 In terms of the video extracts supplied by Luke Best and considered within his evidence, I have reviewed these extracts and I set out my comments below.

4.32 Core Document APP43 Cromwell Avenue (1730), clearly demonstrates that with the proposed mitigation in place this provides an improvement to traffic flow. Furthermore, it is evident that there are no safety issues arising, including in respect of weaving for the Calver Road right-turn manoeuvre and/or straight on along Cromwell Avenue.

4.33 Core Document APP37 shows the operation of Sandy Lane West and its junction with the A49 in the PM peak hour (1700). It is appropriate to note that the amount of Peel Hall development traffic on Sandy Lane West is tiny compared to total traffic and can be seen to cause no noticeable impact. This is not a surprise given that WMMTM16 forecasts up to around 107 development-related vehicle trips westbound in the busiest peak hour (i.e. around 1.5 trips every minute).

4.34 Core Document APP38 shows the operation of the M62 Junction 9 in the AM peak hour (0830), with the proposed mitigation scheme on the eastbound on-slip. It is noticeable that the proportion of Peel Hall development trips are again tiny and have no noticeable impact on the operation or safety of junction 9.

4.35 Lastly, Core Document APP39 shows the A50 Long Lane junction with the A49 operation in the AM peak hour (0830). Again, it is clear that Peel Hall development trips are few and far between and too few to have any meaningful consequence.

Pandemic Implications

4.36 The VISSIM modelling is a truly robust assessment given high growth levels between the scenario years, plus committed development traffic and testing the local network for a future year of 2032. Furthermore, since the start of the Covid-19 pandemic there have been research regarding the effect of the pandemic on travel patterns, including commuting. Most recently, KPMG produced a report (January 2021) titled 'The Future of Towns and Cities Post COVID-19'.

4.37 This KPMG report highlighted the following:

"The pandemic has accelerated the adoption of online shopping, with consumers more likely to purchase household goods online than in a store. It has also made working from home acceptable and online gatherings rather than meeting in person the new norm, freeing endless hours of business travel and expense for better use. People are unlikely to return to the old ways of doing things."

"With fewer people coming in to big cities and towns to work and shop, that leaves a big space in areas that were once characterised by bustling shops and offices"

"Transport links will need to be reconsidered, as well as additional infrastructure needs. The pandemic has made it essential for places to galvanise"

"The big revelation of the pandemic has been how effectively many people can work from home. As the virus struck, businesses proved agile at transferring activity to workers' homes, taking advantage of new telecommunication platforms. Not all was smooth sailing, but the adoption of a new mode of working resulted in some gains for both companies and workers:

— forfeiting most business travel allowed companies to save costs and gave workers more time to focus on their core tasks, potentially making them more productive. Virtual meetings also enabled broader access to top experts; Team A was almost always available anywhere in the world at short notice (and at much less expense when travel costs and time were avoided)

— suspending the daily commute enabled workers to save time and money, allowing many to work more flexibly. (One of the downsides of this is a blurring between work and home life.)

There is a debate how permanent these changes will prove once the virus is no longer a threat and people can return to normal socialising."

4.38 It can be seen from the KPMG document (provided at **Appendix DT/V8**) that comprehensive analysis of long-term changes in commuting and traffic volume post-COVID-19 has been carried out. Specifically, the expected increase in proportion of jobs which will be carried out by people working from home, and reduction in those employed

in high-street retail jobs for all major towns and cities in England (109 locations), including Warrington has been completed and summarised in 4 comparison tables:

Table 1 - Percentage of jobs expected to continue being done from home post-COVID
Table 2 - The impact of accelerated online adoption on local high streets
Table 3 - Strength of local cultural offering
Table 4 - Post-COVID vulnerability of town and city centres in England

4.39 Table 1 (page 4) "*Percentage of jobs expected to continue being done from home post-COVID*" contains data on the proportion of all jobs that are expected to be carried out by people working remotely in the future. **21.6% of all jobs in Warrington are expected to be carried out from home in the future – the third highest proportion of all towns and cities assessed**.

4.40 Table 2 (page 7) "*The impact of accelerated online adoption on local high streets*" estimates the effect of online retail on town centre employment, each town and city surveyed is ranked in terms of the percentage of total retail jobs which will be lost. Warrington has the fifth highest proportion of all losses in this table, as extracted below.

Town/city	Jobs lost	% of total retail	% of total employment
Warrington	3,546	36%	3.0%

4.41 In addition to the above, each town and city has been assessed based on changes in the strength of local cultural offering, which will arise from a reduction in retail provision and people visiting for work purposes. The comparison contained in Table 3 (Page 10) "*Strength of local cultural offering*" does not rank the towns and cities compared. The result of the assessment for Warrington is summarised below.

Town/city	Sports facilities	Culture and recreation	Restaurants, cafes, pubs and bars
Warrington	-0.18	0.17	0.02

4.42 The results of the assessments set out in Tables 1-3 above were used in the summary contained in Table 4 (page 11) "*Post-COVID vulnerability of town and city centres in England"*, which has ranked Warrington as the fourth worst affected town/city in England.

4.43 It is expected that the pandemic will have resulted in reduced growth over a period of several years compared to that forecast, such that what has been predicted for 2032 is not likely to be realised until much later. I consider that it is likely to be a long time before Warrington experiences congestion levels commensurate with that experienced pre-pandemic.

4.44 Therefore, given the information set out above, the modelling should be considered highly robust.

4.45 To supplement the research on the implications of the pandemic, Core Document APP36 sets out a series of short Technical Notes of peak hour traffic conditions on and around the area of the A49 corridor, for early April 2019, September 2020, January 2021 and February 2021.

4.46 These reports are provided to illustrate pre-pandemic (2019), post pandemic lockdown 1 (2020) and current traffic conditions at time of writing this evidence (2021 - lockdown) on the highway network in the study area of north Warrington, and show that there has been a reduction in congestion levels along the strategic corridor of the A49 since the pandemic, as would be expected.

5.0 Conclusion

5.1 I conclude that there are no reasons arising from the VISSIM modelling that affect the conclusion in my main proof of evidence, that there are no highways or transport related reasons to withhold the granting of planning permission for the appeal scheme.

Appendix DT/V1

Peel Hall Study Area

NOTES:

KEY

Wider Study Area

VISSIM Network

Locations of concern raised by WBC

ISSUE	REASON FOR REVISION	DATE
A	Updates to key and map	28/01/21

PROJECT:

PEEL HALL, WARRINGTON

CLIENT:

SATNAM MILLENNIUM LTD

PROJECT REFERENCE:	DRAWING NUMBER:	SCALE:
1901	101	NOT TO SCALE

HighgateTransportation
www.highgatetransportation.co.uk
First Floor, 43-45 Park Street
Bristol BS15NL
0117 934 9121

TITLE:

WIDER STUDY AREA, VISSIM MODELLING AREA & LOCATIONS OF IMPACT

DATE:	DRAWN BY:	CHECKED:
26/01/21	AH	FB

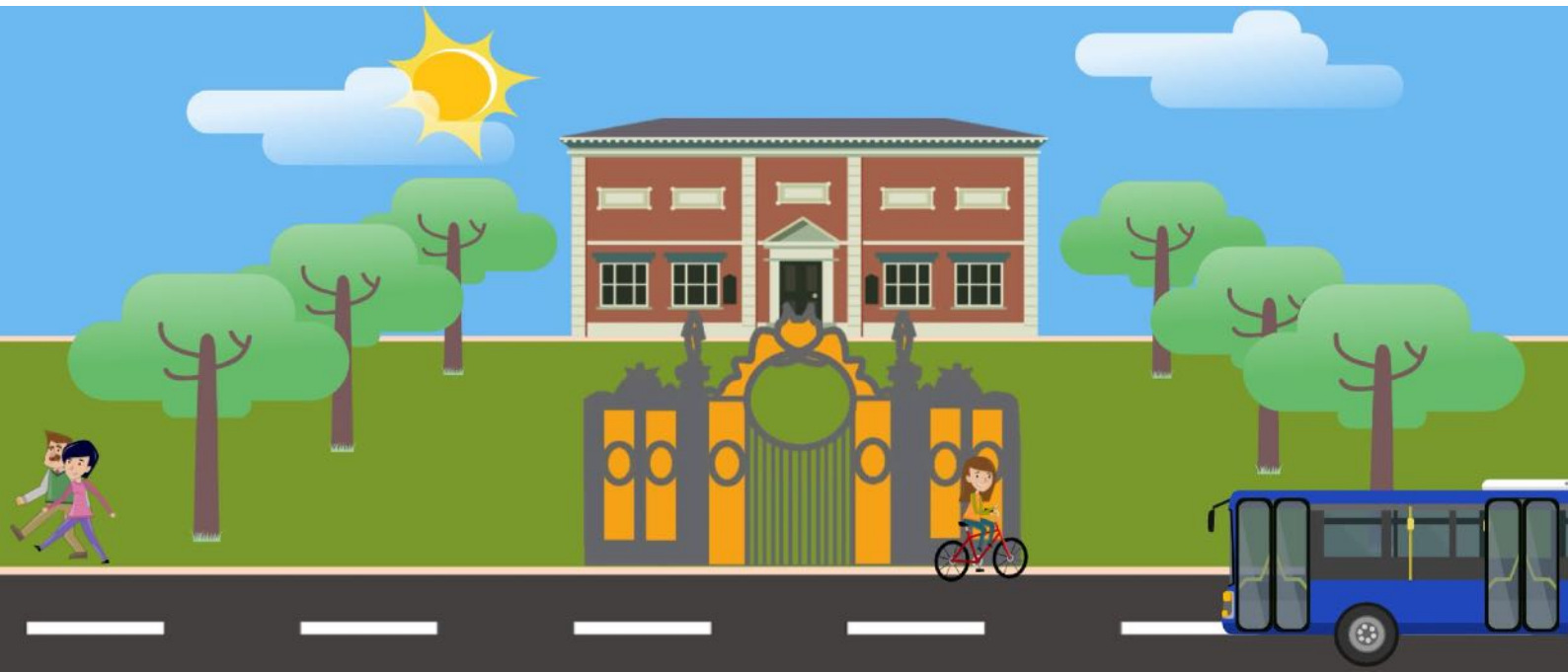
Appendix DT/V2

Warrington LTP4 Extracts

December 2019

WARRINGTON
Borough Council

WARRINGTON FOURTH LOCAL TRANSPORT PLAN



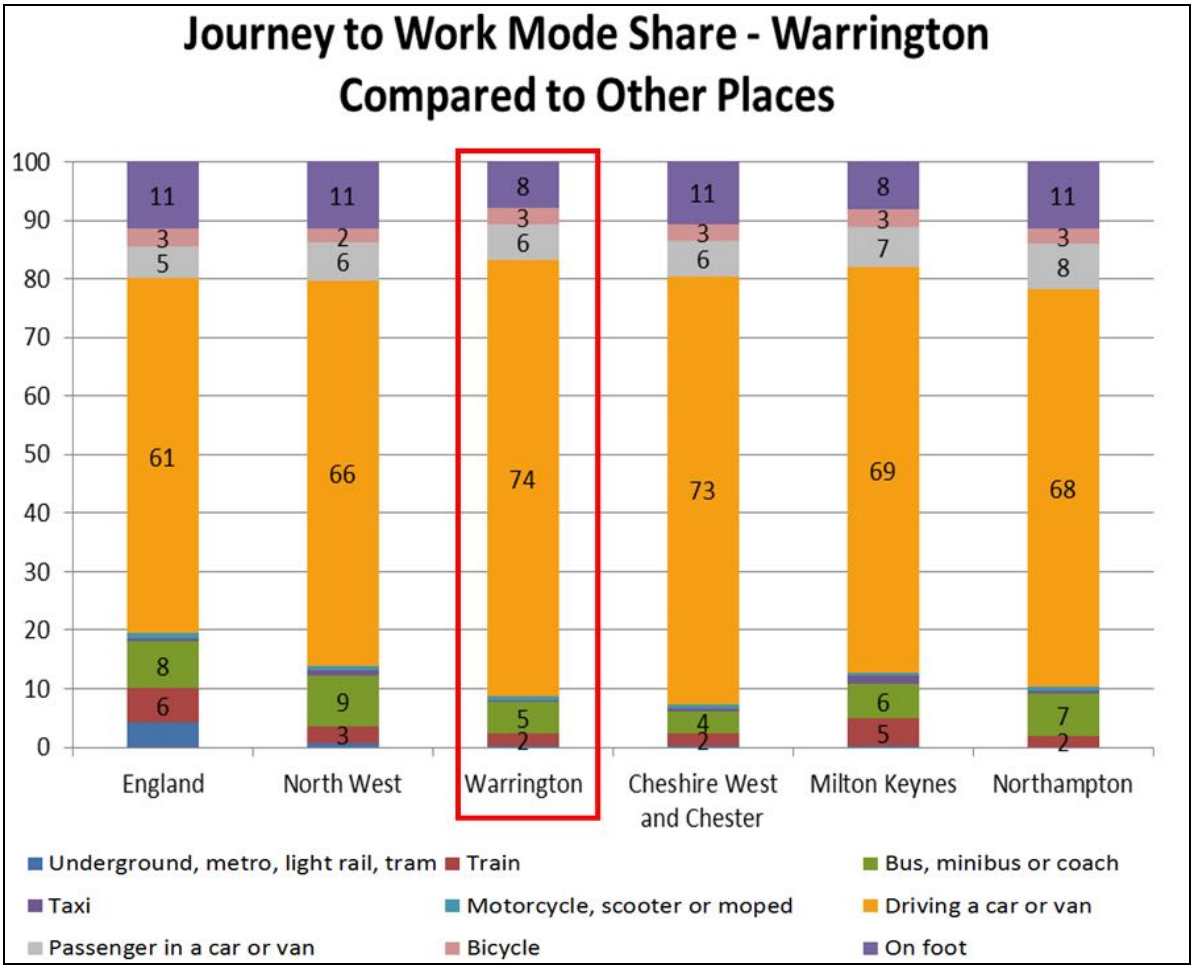


Figure 3.1 - Journey to Work Mode Share Compared to other places (Census 2011[13])

Department for Transport data shows that between 2008 and 2018, car traffic has fluctuated over time but it has increased overall. For this data 'Major Roads' are considered to be motorways and all class 'A' roads. Total traffic on major roads in Warrington is shown in Figure 3.2.

Higher than average levels of car use is causing congestion in Warrington, leading to longer and less reliable journey times:

- Average journey times in the morning peak are approximately three minutes to travel one mile across 'A' roads. This is lower than the main metropolitan centres of Merseyside and Greater Manchester but higher than adjacent authorities. Full details are provided in Table 3.2
- In the town centre, Wilson Patten Street, as an example, has an average speed less than 10mph in peak periods, which is comparable with the average commuter cycling speed.
- Away from the town centre, the A574 (Birchwood Way) from the M6 during the morning peak has an average speed of 15-20mph, compared to 40mph during the inter-peak

[13] https://www.nomisweb.co.uk/census/2011/qs701ew

5.4 Changing How We Travel

The way we travel around Warrington has a huge impact on the character of our town and the way that we feel about the place that we live. Through LTP4 we want to create a Warrington that is not dominated by car movements, and where streets provide a space for people that is pleasant to be in.

Warrington should be a place where significantly more people choose to walk, cycle, and use public transport, allowing them to live healthier lifestyles. This requires a transformational change in the transport offer that is currently available to residents.

Fundamental to delivering our transport vision is reducing the number of trips made by private car. From Table 4.1 it can be seen that 73.9% of commuters drive to work according to Census data. Our aspiration is to reduce Journey to Work mode share for drivers of cars/vans to 60% by the first Census (2041) that will take place after the end of LTP/Local Plan period in 2037.

To be successful in delivering this change in modal share for private car use we need to significantly increase the number of people that travel by other modes. To have a transformative effect on the town we need to facilitate significant increases in cycling (approximate 2.5 times increase in the proportion of cycling), bus and local public transport (nearly 3 times the proportion for bus use), and increases in walking. This is shown in Figure 5.3.

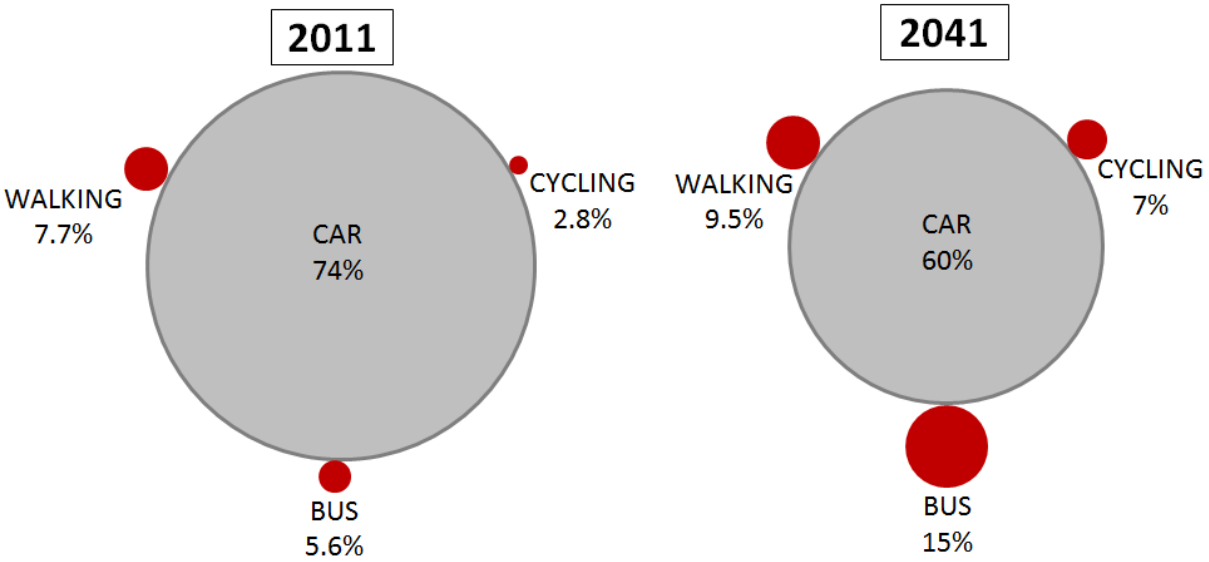


Figure 5.3 - Aspirational Mode Share Change

How we expect the share for each mode to change between now and 2041 is set out in the Monitoring and Evaluation Strategy (Appendix C). To successfully deliver our vision and objectives we have developed a set of policies that will encourage a modal shift for all trips, but have set our modal shift aspiration based on commuting trips alone because:

- Census data is reliable and consistent in its collection techniques, allowing us to make the best like-for-like comparison
- Our network is most congested during the peak periods for commuting

Appendix DT/V3

TN/31 – VISSIM Timeline and Chronology

HighgateTransportation

Highgate Transportation Ltd
First Floor, 43-45 Park Street, BRISTOL BS1 5NL
0117 934 9121
Company Registration Number: 07500534

TECHNICAL NOTE

PROJECT: Peel Hall, Warrington

REPORT: 1901/TN/31 – Detailed VISSIM Chronology

DATE: January 2021

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1. This Technical Note (TN/31) sets out a table of VISSIM model submissions and dates of auditor responses as well as a detailed chronology of the VISSIM modelling process.

Table 1 – VISSIM Model Submissions and Dates of Auditor Responses

Date	Document Date	Description	Summary of Auditor Comments
10/01/20	10/01/20	Base Model v1 First VISSIM base model issue following correspondence re: methodology and WMMTM16 data	
28/01/20	24/01/20	WSP Audit (TN01) of Base Model v1	The model has met the microsimulation modelling guidance Queues 'might be' underestimated Car demand on Northway link to be reviewed
10/02/20	07/02/20	Atkins Audit of Base Model v1	Model of reasonable standard Request additional journey times for routes through M62 J9
23/03/20	22/02/20	Base Model v2 Submitted in TAA (and model provided on 26th) Amended demand on Northway link and vehicle classes Recalibration and validation	

Date	Document Date	Description	Summary of Auditor Comments
23/03/20	04/02/20	Access Strategy A Future Years Modelling (v1) – no Peel Hall mitigation Submitted in TAA (and model on 26th)	
23/03/20	06/03/20	Access Strategy A Future Years Modelling (v2) – Peel Hall mitigation signal upgrade at A49/A50/Hawleys Lane junction and ghost right turn lane A49/Golborne Road Submitted in TAA (and model on 26th)	
23/03/20	-	Responses to WSP and Atkins Audits of Base v1 Summary – auditor comments mainly related to parameters in the AECOM model (agreed for use in methodology) Submitted in TAA (and model on 26th)	
20/04/20	08/04/20	WSP Audit (TN02) of Base Model v2 and Access Strategy A Future Years Modelling	Not validated queues, which appear short, and not reflective of long delays on some local roads Review of methodology required for future year flow input from WMMTM16 to VISSIM Methodology for motorway mainline growth to be provided Development car vehicle behaviours to be reviewed Supressed demand evident
20/04/20	15/04/20	Atkins Audit of TAA (including Atkins Audit of Base Model v2 and Access Strategy A Future Years Modelling)	Base VISSIM of reasonable standard but not fit for purpose
18/05/20	15/05/20	Base Model v3, commentary and Methodology Addendum Driving behaviours updated from AECOM model for slip roads and Sandy Lane West Revised signal data input from WBC for M62 J9 Recalibration and validation	

Date	Document Date	Description	Summary of Auditor Comments
10/06/20	05/06/20	Atkins Audit of Base Model v3	Fit for purpose
22/06/20	19/06/20	WSP Audit (TN05) of Base Model v3	High level review – maintain concerns over queue lengths and delay on Sandy Lane West and A50 Long Lane. Request additional journey time data is obtained
08/07/20	08/07/20	WSP Audit (TN06) of conversion spreadsheets	
20/07/20	17/07/20	Base Model v4 Additional journey time data added – recalibration and validation Minor tweak to signal timings at A49/Sandy Lane West	
03/08/20	31/07/20	Atkins Audit of Base Model v4	Fit for purpose
06/08/20	05/08/20	Base Model v5.0 (issued as part of August package) No changes from v4	
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/Hawleys Lane junction and ghost right turn lane A49/Golborne Road Further to Base Model v4 July issue Mitigation was signal upgrade at A49/A50/Hawleys Lane junction and ghost right turn lane A49/Golborne Road	

Date	Document Date	Description	Summary of Auditor Comments
17/08/20	14/08/20	Access Strategy A Future Years Modelling (v4) Peel Hall mitigation signal upgrade at A49/A50/Hawleys 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) Slight amends to priority control coding due to observations in future year modelling rippled back to base model Pull-through glitch to future years modelling highlighted 26th August by auditors. This was identified by Modelling Group 27th August as an external spreadsheet link that had failed to reload. This was swiftly rectified. Atkins audit team confirmed that understandable.	
28/08/20	12/08/20	WSP Audit (TN07) of Base Model v4	July base suitable for future scenario testing
28/08/20	28/08/20	WSP Audit (TN08) of Base Model v5.1	Some 'significant' changes to queue lengths from July model – very long Query over priority control changes A49/Cromwell Avenue/ Sandy Lane West
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) (*as superseding v3*)	Highlighting pull-through glitch Query why priority control changes A49/Cromwell Avenue/ Sandy Lane West where no mitigation proposed Journey time route on Sandy Lane West should be extended

Date	Document Date	Description	Summary of Auditor Comments
07/09/20	09/09/20	Atkins Audit of Base Model (v5.1), Access Strategy A Future Years Modelling (v3) and subsequent Mitigation Option S+ Modelling (v4) (*as superseding v2*)	'Fit for purpose' base Agreed with MG, Atkins and WSP that development flow input in the VISSIM is fit for purpose for this assessment Highlighting pull-through glitch
08/09/20	07/09/20	Base Model v5.2 with Access Strategy A Future Years Modelling and Mitigation Option S+ (v5) Package Peel Hall mitigation signal upgrade at A49/A50/Hawleys 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 Rationalisation of the priority measures made to A49/Cromwell Avenue/ Sandy Lane West further to WSP comment Re-run of future years to account for changes to the base model, the pull-through glitch and further mitigation testing	
23/09/20	23/09/20	WSP Audit of Base Model v5.2 and Access Strategy A Future Years Modelling and Mitigation Option S+ (v5)	Queue lengths significantly different to July v4 base model – await WBC confirmation
23/09/20	23/09/20	Atkins Audit of Base Model v5.2 and Access Strategy A Future Years Modelling and Mitigation Option S+ (v5)	Base likely ok but request updated LMVR Issues in future year traffic flow input Mitigation expected for M62 Junction 9
16/10/20	15/10/20	Base Model v6 and Changes Registry The base model had been subject to various iterations since the first package in January. The opportunity was taken to review the model coding and achieve queue lengths acceptable to WBC	

Date	Document Date	Description	Summary of Auditor Comments
16/10/20	15/10/20	Base Model v6 and Changes Registry The base model had been subject to various iterations since the first package in January. The opportunity was taken to review the model coding and achieve queue lengths acceptable to WBC	
02/11/20	30/10/20	Atkins Audit of Base Model v6	Fit for purpose
02/11/20	02/11/20	WSP Audit of Base Model v6	Flow calibration and journey time validation meet the modelling criteria set out in the DMRB WebTAG Queues representative of typical peak period conditions Raise issue of lane designation at A49/Cromwell Ave/Sandy Lane West – request change to base
13/11/20	13/11/20	WBC Base Model v6 sign-off	With caveat that changes sought to lane designation at A49/Cromwell Ave/Sandy Lane West roundabout in future years modelling
02/12/20	30/11/20	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	

Date	Document Date	Description	Summary of Auditor Comments
08/01/21	11/01/20	WSP Audit of Access Strategy A Future Years Modelling package with S+ and M4 mitigation (v6)	Modelling sound Forecast demand not consistent between Saturn and VISSIM Query merging on Cromwell Avenue beyond extent of mitigation works proposed Concern regarding start-stop movements on circulatory carriageways at A49/ Cromwell Avenue/ Sandy Lane West and M62 J9 roundabouts Concern over signal timing optimisation in future years at A49/Cromwell Avenue Sandy Lane West roundabout Latent demand on Sandy Lane West and queue lengths indicate development impact cannot be adequately mitigated against Level of latent demand and queueing and queueing on Long Lane means impact of the development on this link cannot be adequately assessed M4 mitigation package performance is minimal and is not fully assessed in the modelling
11/01/21	14/12/20	Atkins Audit of Access Strategy A Future Years Modelling package with S+ and M4 mitigation (v6)	Modelling sound Query signal timing optimisation used at M62 J9 and therefore mitigation proposed Query Hollins Lane committed mitigation

January 2019 to December 2019

2. At a meeting attended with WBC and HE on 11th February 2019, when scoping was being considered for a second planning application, it was agreed that a VISSIM corridor model would be produced in respect of the A49 between A50 in the south and Golborne Road in the north.
3. The starting point for this VISSIM model would be to take the 2015 VISSIM A49 corridor model developed originally for HE (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.
4. Further discussions and meetings took place on how the modelling would be developed to assess the impact from Peel Hall, including the need for Satnam to fund WBC to have their WMMTM16 SATURN model run to obtain data, which would be used in the VISSIM future years modelling. This work was commissioned in April 2019 and the results made available in September 2019, with the final datasets provided mid December 2019.
5. Following the quashing of the 2018 appeal decision in October 2019, it was agreed that the use of VISSIM would be carried forward to support the work for the reopened inquiry. Modelling Group were appointed to the Appellant team in October 2019 and in November 2019 the methodology for the VISSIM modelling was agreed with WBC and HE and modelling work commenced.

January 2020 to End of September 2020 Following the Adjournment of the Inquiry

6. The VISSIM base model (v1) package was issued to WBC and HE on 10th January 2020.
7. Auditor comments were received on 28th January (WBC) and 10th February (HE) and can be summarised as:
    i. January audit from WSP, on behalf of WBC, confirmed the base model met microsimulation modelling criteria.
    ii. WSP considered that the queue lengths at the A49/Cromwell Avenue/Sandy Lane West, A49/A50 and A49/M62 Junction 9 'may be' underestimated.
    iii. WSP noted that the demand on a Northway link appeared to have been doubled.

iv. February audit from Atkins, on behalf of HE, set out that coding and left-over coding from AECOM modelling makes the model files unnecessarily complex.

v. Eight warnings produced by VISSIM upon opening the files regarding discontinued vehicle types – suggest updating the 3D model distribution to ensure all selected vehicle models are from the current database.

vi. Atkins queried why the model had been converted from Dynamic to Static assignment (*a process detailed in the agreed methodology*) and highlighted a subsequent drop in the number of OD pairs with flows assigned to them.

vii. Atkins claimed the network coding (*relating to the existing AECOM model used*) is different to how they would code the model and they will review this in detail once the model is correctly aligned to the background (*previously agreed model background was aligned*).

viii. Changes requested by Atkins to the driving/link behaviour parameters (*no changes had been made from the previously approved AECOM model*).

ix. Atkins acknowledge that 'the overall journey times suggest the model is generally robust' but query journey times on the M62 Junction 9 southbound movements (232m long) of +71% (*this represented 21 seconds and draws attention to the fact that these standards were not designed for very small sections i.e. shorter than 3km*).

8. From this it can be concluded that WSP acknowledged that the base model met the validation criteria, and that Atkins raised points generally related to the validated AECOM VISSIM.

9. In terms of the VISSIM base model development during the period February to March 2020, this was updated by late February 2020 (v2) taking into account the auditor comments that were in line with the agreed methodology, ready for the future year modelling to begin. For example:

i. Explained where comments were relevant to the bespoke coding of the existing validated AECOM model.

ii. Consideration given to impact of auditor comment on operation of the model i.e. where a potential change request was not considered to impact the reporting of the modelling these were not taken into account.

iii. Northway link demand amended.

iv. 3D model distribution vehicle types updated.

v. Explained (as set out in the LMVR v1) that 'during the process to convert the original model from dynamic assignment to static assignment, an option to remove any routes with less than 0.02 relative volume and/or less than 2 absolute minimum volume was selected in an attempt to minimise the subsequent total amount of static routes to work with'. The drop in OD pairing was explained in the accompanying tables 2.1-2.4 of the LMVR and resulted from the original models containing a great many routes with total volumes of often less than 1.

10. In terms of modelling of the future year scenarios, this was provided in the March 2020 Transport Assessment Addendum using the base model v2 (also issued at that time). It can be noted that delays to the traffic flow conversion process in readiness of running the future year scenarios occurred due to required input from WBC's WMMTM16, but the flows from that model were not finalised and made available to the appellant team until mid December 2019.

11. The Transport Assessment Addendum was issued on 23rd March 2020 and in respect of VISSIM included an overview and review of the results and provided responses to each of the WSP and HE base model audits, demonstrating where comments had been taken on board. The Transport Assessment Addendum mitigation package on the A49 corridor included for ghost right turn works at the A49/Golborne Road junction and a MOVA signal upgrade at the A49/A50 four-arm signal junction (the latter identified as likely at the 14th January 2020 meeting with WBC).

12. A virtual meeting was held to discuss the March submission on 6th April and formal auditor comments were received on 20th April from both WBC and HE. Between these dates, further discussion and progression of the modelling took place. The comments can be summarised as:

i. WSP commented that the base model queueing on Sandy Lane (West) and the A50 do not reflect long delays currently seen when comparing to 2020 Google Traffic.

ii. WSP also noted that flow volume on Sandy Lane (West) is below observed, which may contribute to the lack of queueing and delay.

iii. In terms of the future years modelling WSP observed minor flow discrepancies between the SATURN outputs and LinSig files for the VISSIM, and between LinSig

and VISSIM inputs, due to the methodology used for forecast traffic demand and recommended a revised approach.

iv. Driving behaviour of development cars abnormal – WSP suggest this is reviewed.

v. Error messages indicating significant demand suppression, therefore WSP suggest methodology for matrix estimation should be revised.

vi. Atkins comment that the base model is of reasonable standard, but that without the signal timing confirmation from WBC and some minor comments addressed as discussed on the virtual meeting, as well as additional journey time information for the motorway, they would be unable to sign off the base, and that despite the agreement for use of the AECOM model it is the modellers responsibility 'to make the model accurate and fit for purpose'.

13. Atkins future years modelling comments surrounded concerns regarding the input of the WMMTM16 flows and complexity of the labelling within Scenario Management and modification files, with a general comment regarding the re-running of WMMTM16 to account for the proposed mitigation in the north of the study area (Delph Lane/Middleton Lane and A49/Golborne Road) to test impact of mitigation on traffic flows at M62 Junction 9.

14. Atkins also highlighted network coding of the committed improvement scheme for the A49/Delph Lane signalised junction and the left-turn movement from the Winwick Link Road roundabout to the A49 south.

15. The Network Performance Statistic demonstrates that all Do Something scenarios will result in an increase in delay and reduction in average speed compared to Do Minimum scenarios. Therefore, identifying that additional mitigation is required.

16. It can be noted that additional signal data information was provided by WBC for the M62 Junction 9 (running MOVA) in late April 2020, which was not available from their signal team in November 2019. It can also be noted that this was after submission of the Transport Assessment Addendum and after the agreed inquiry timetable.

17. The base model and modelling methodology were further developed in line with these comments and requests. Examples as follows:

i. Driving behaviours for development cars updated.

ii. Re-run of WBC's WMMTM16 at the cost of the developer, which demonstrated no significant change to flows forecast at the M62 Junction 9.

iii. Alterations to coding of committed mitigation to align with auditors' views of impacts and usage.

iv. Neither the future Do Minimum or Do Something scenarios operated particularly well until the committed Hollins Lane improvement scheme was added to the modelling (*outside the agreed corridor, but creating a bottle neck in the network in future years*).

18. An updated base model was subsequently provided 18th May 2020 (v3) along with a commentary on the changes made. Additional information (replacement AM journey time table on page 17 of the LMVR) was provided 27th May 2020 – this did not impact the summary of the results.

19. The May base model (v3) was signed off by HE early June 2020 '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'.

20. A methodology addendum detailing conversion of traffic flows for the future year modelling was also provided to WBC and HE on 18th May 2020. Following this a scenario matrix was provided on 12th June for comment and to provide clarity on the options to be modelled given that auditor comments were made regarding future year scenarios and mitigation tested.

21. WBC were chased again for comment on the VISSIM base model (v3) on 17th and 18th June 2020, as the delay in the audit was holding up the modelling process and delaying additional future year testing and reporting.

22. The WBC auditor's comments on the VISSIM base model v3 were issued on 22nd June 2020 and can be summarised as:

i. Significant disparity in journey time on Sandy Lane West and A50 Long Lane compared to observed data from November 2018.

ii. Long queues on Sandy Lane West particularly in the PM peak period, and long queues and latent demand on the A50 Long Lane.

iii. It would be appropriate for the reporting of queues to be in 5 or 10 minute segments.

23. The audit comments were responded to on 23rd June 2020 and can be summarised as follows:

    i. Signal timings amended by one second on the Sandy Lane West approach to the A49 signalised roundabout. However, considered unsuitable to compare the model to journey time data from a different month and year.

    ii. Journey time data sample size checked to ensure more than large enough to provide a robust dataset for validation.

    All sections found to generally have volumes measured in the hundreds of vehicles and spread over seven days – far exceeding the minimum criteria in WebTAG.

    iii. Queuing performance was remodelled based on Google Traffic as requested (non-empirical evidence).

    iv. However, given that this did not appear to resolve the apparent issue, and despite not requested at the scoping stage, the decision was taken to purchase additional TomTom journey time data for Sandy Lane West, the A50 Long Lane and the M62 mainline.

24. Therefore, in terms of work on the base model during the period mid June to mid July 2020, this included updated journey time data collection and a revised base model (v4) was issued 20th July 2020.

25. In terms of the future year modelling during the period mid June to mid July 2020, the traffic flow matrix conversion spreadsheets were compiled and provided to WBC and HE for comment on 30th June 2020. WSP responded on 8th July with a review of the matrix conversion spreadsheets and a virtual meeting was set up with WSP, Modelling Group, HTp and Atkins for 10th July 2020. Subsequent to this, HTp circulated the development profile for each scenario and noted that the basis of the methodology was agreed, with concerns raised relating to labelling and clarity of the spreadsheets.

26. WSP provided a high-level response on the VISSIM base model (v4) and the submitted forecasting spreadsheets on 23rd July 2020. In terms of the base model, this was a request for queue reporting in 5 or 10 minute segments. HTp responded on 24th July 2020 as follows:
    i. Querying the use of queue data segments when Basemap data suggests hourly queue lengths and are referenced in the model, and the VISSIM is validated against journey times and delay, not queues.
    ii. Setting out that queue lengths are not a formal validation criterion.
    iii. Confirming that we have a note to provide additional queue length data when all future years have been run.
    iv. Agreeing that queue lengths can provide a like-for-like comparison between Do Minimum and Do Something scenarios in the same design year.
    v. It should be noted that WMMTM16 data is provided as two different datasets for Do Minimum and Do Something, whereby redistribution is evident in the Saturn model.
    vi. Provision of information and clarity on the spreadsheets from Modelling Group.
27. WSP responded on 28th July 2020 confirming that they would carry out a model run to extract the queue data (although it can be noted that this was done in 15 minute segments rather than their suggested 5 or 10 minute segments, which provided an alarmist view). WSP also requested further clarity on the conversion process spreadsheets. HTp responded to the requests for information on 29th July 2020. A further email was received from WSP on 31st July requesting a timeline for final input for forecast flows and loading of Peel Hall development traffic into the model. It should be noted that WSP were requesting future year modelling prior to confirming sign-off of the base model.
28. HE provided comments on the VISSIM base model (v4) on 3rd August signing off as fit for purpose. Atkins did not follow the supplied matrix conversion spreadsheets due to the complexity and hence were unable to sign them off.

29. Auditor comments relating to VISSIM base model (v4) were not issued by WSP until 28th August 2020 (TN07), i.e. after submission of v5.0 and 5.1 base models, but can be summarised here as follows:
    i. Request an extension to Route 20 Sandy Lane West be provided in the future to allow for comparative reporting of development impact (NB: Sandy Lane West is only around 300m long and the methodology of the modelling area was not beyond the end of Sandy Lane West at its roundabout with Cotswold Road, Cleveland Road and Sandy Lane).
    ii. Overall model routes are within 15% of observed journey times and therefore meets model validation criteria.
    iii. Queue lengths more representative of what WBC would expect to see.
    iv. 'The *model is now considered to be a suitable base for forecast scenario testing'*.
30. The fifth release of the VISSIM base model v5 was unchanged from v4. This and the associated future years modelling reports were issued on 6th August 2020. Arising from these modelling results it was apparent that improvements to the left-turn capacity of the A49 northbound traffic to Cromwell Avenue could be beneficial. As such, additional modelling was carried out as a sensitivity test to assess the benefits of extending the left-turn lane and adding a second left-turn lane.
31. At the time of this VISSIM iteration, it appeared that the issues were narrow and not far from agreement, with a base model accepted by HE and a package of mitigation being formed for discussion.
32. It should be noted that proofs of evidence were submitted on 10th August 2020.
33. On 17th August 2020, the sensitivity test for capacity improvements to the A49 northbound left-turn to Cromwell Avenue were issued. The package included a slightly updated base model (v5.1) as a result of rippling back small changes to priority rules at junctions in the future years to improve traffic flows as a result of the large increases in background growth across the 12 year period from the 2019 base model. However, a modelling glitch had occurred with the transposition of flow data from the conversion spreadsheets into VISSIM in this submission, regarding an external link that failed to update as expected.

34. The individual impacts were not so great as to be noticeable in the reporting from the model. The glitch was identified by Atkins on 26th August 2020 and confirmed by Modelling Group on 27th August 2020 and rectified. This was accounted for as part of the next iteration addressing other auditor comments.

35. WSP audit reports (TN08 Base and TN09 Future Years) issued on 28th August 2020 regarding the August VISSIM submission packages, along with their TN07 (see **paragraph 32**), can be summarised as:

    i. Noted the priority rule changes at the A49/Cromwell Avenue/Sandy Lane West roundabout from the July base model (v4).

    ii. Request an extension to Route 20 Sandy Lane West be provided in the future.

    iii. Noted that, v5.1 compared with the July base model v4, Sandy Lane West journey times not within 15% criteria (33% difference, equating to 39 seconds) – but within the (second) one minute criteria. However, overall the model meets journey time validation criteria, even on the 15% travel time measure.

    iv. Changes to queue lengths and profiles from the July base model noted (awaiting WBC comment at that time – not provided in TN08 (submitted as draft)).

    v. Observation of simulation runs – '*On the southern roundabout circulatory vehicles were observed to queue in the offside lane when waiting to exit to Cromwell Avenue. This generally occurs with 1-2 vehicles quite frequently. This therefore is slightly overestimating the queue stacking capacity at this point because only two lanes are available to the ahead movement*.

    vi. '*The queue blocking on Sandy Lane is a relatively infrequent occurrence and may to some extent happen in reality. The incorrect lane usage on the roundabout will alter queue length but only by 1-2 PCUs. We consider these points should be raised, so we are cognisant of them, if network changes due to mitigation in later model runs resolve this issue*.'.

    vii. In terms of the future years modelling these comments related to:

        - Differences in forecast traffic flows on specific links (*relating directly to WMMTM16 data; inputs shared evenly between origins prior to reaching the corridor*).
        - Differences in forecast development traffic between 2027 and 2032 (*as expected, different development scenarios*).

- Reporting should discount model outputs from 'locked up' runs to avoid skewing results.

36. WBC emailed PINS 7th September 2020 highlighting pull through glitch (*corrupted spreadsheet external link*) which was identified by Atkins as set out in **paragraph 37**, and impact of this on inquiry timetable.

37. On the 7th September 2020 HE emailed HTp Atkins' caveated acceptance of base model (dated 9th September 2020) and those issued on 18th May, 20th July and 17th August 2020 (v5.1 as it superseded v5.0); and future years modelling comments (in the knowledge that an updated package about to be provided the following day) summarised as follows:

    i. New version of the matrix conversion spreadsheet requested to clarify file naming conventions that have caused the auditors confusion (*provided in download link*).

    ii. Confirmation that development flow inputs to VISSIM in the spreadsheets, as agreed by WSP, Atkins and Modelling Group, is deemed fit for purpose for this assessment.

    iii. Glitch in late August future years modelling spreadsheet transposition of flows into VISSIM.

38. Revised Future Years modelling and 2032 S+ modelling package (including base v5.2) reissued on 8th September 2020 in response to auditor comments from Atkins and WSP during the second half of August 2020, confirming S+ mitigation package (previously a sensitivity test), updated base model and accounting for the glitch. This package showed that mitigation could be required at the M62 Junction 9, but it was noted that changes to signal timings and/or the more responsive MOVA on site may well be capable of resolving the resultant impact shown from the VISSIM. Work had started on this sensitivity test for M62 Junction 9 mitigation by the time of this 8th September 2020 submission.

39. On 8th September 2020, WSP emailed HTp confirmation that the base year model is 'fit for purpose' but that they had requested WBC feedback on queuing. WSP requested the matrix conversion spreadsheets and HTp confirmed, by reply, that they had not been changed or updated since the last iteration but had been added to the package download link following this request.

40. HE emailed PINS on 9th September 2020 containing their position statement and a summary statement on VISSIM from Atkins (condensed version of that contained in email to HTp 7th September 2020) making much of the future year spreadsheet glitch and focussing only on the August submissions, with the covering email stating that insufficient time available between receipt of 8th September 2020 VISSIM submission and the start of the inquiry.

41. On 9th September 2020 PINS emailed all parties and confirmed that the Inspector's view was that the VISSIM base model appears sound, but the future years modelling is unreliable in terms of forecasting and mitigation arising and that this is raised by HE as a serious issue with regard to their strategic network. A query was raised with regard to the subsequent impact on Air Quality and Noise.

42. In response, HTp emailed PINS on the 9th September 2020 with a letter setting out that the glitch was being blown out of proportion, highlighting that as a result of the 8th September 2020 submission package we were exploring a sensitivity test for mitigation at the M62 Junction 9 and that this was expected to be agreed in the first week of the inquiry. Furthermore, that the VISSIM modelling has no impact whatsoever on Air Quality and Noise evidence.

43. Atkins emailed HTp 14th September 2020 siting annual leave had prevented any review of the 8th September VISSIM submission and requesting confirmation of a newer VISSIM submission further to our possible receipt of comments from WBC on 9th September 2020 (*no information/comments received from WSP at time stated*).

44. WBC position statement of 14th September 2020 set out that a high level review of the VISSIM submission of 8th September 2020 had been carried out by WSP to inform the inquiry. Their concerns related to the base model queues in August and September 2020 (both similar) were different to that of the July base model (v4) that was considered acceptable by WBC and that Modelling Group had yet to explain this issue.

45. The second concern raised was with regard to signal changes, arising from the agreed principle of optimisation, not being 'logical'. Thirdly was the complaint that the forecasting spreadsheets are large and complex and that demand differences are apparent between 2027 and 2032.

46. Lastly, that the forecast modelling for the S+ package (extension to the A49 left-turn lane to Cromwell Avenue and additional lane) was coded so that both lanes could be used to access Cromwell Avenue rather than split as one for Cromwell Avenue and one for Calver Road, and furthermore that the coding for the circulatory allowed queueing in both lanes for that exit also. Subsequently, WBC advised that an urgent meeting be held to discuss. HTp arranged this meeting for 15th September 2020 (*originally accepted by HE for attendance by their modelling consultants*).
47. A second email from WBC was issued to PINS 14th September 2020 proposing timescales in respect of the VISSIM modelling presented as the joint view of WBC and HE, and suggesting an appropriate date for the final VISSIM submission deadline should be 7th December 2020. Given this, HE and WBC would then require time to review and assess the final outputs and if necessary, prepare, share and review evidence. Therefore, the earliest date for the reopened inquiry would be early March 2021.
48. On 15th September WBC emailed HTp (and separately to PINS when the delay to the urgent meeting was flagged by the Appellant as unreasonable) that they and HE agree the 'urgent' meeting should instead be scheduled towards the end of the following week.
49. HE also emailed PINS 15th September 2020 changing their mind and stating the urgent meeting be pushed back due to their inability to constructively comment on the model issued on 8th September 2020.
50. The meeting was delayed to 24th September 2020.
51. An agenda was agreed on 21st September 2020, which also set out the expectation was for the receipt of audit reports by Friday 25th September 2020 (i.e. post the meeting scheduled for the morning of 24th to enable any adjustments/additions to the audits to be made following discussion).
52. The inquiry was adjourned on the 22nd September 2020 until 9th March 2021. The confirmation email from PINS (on 25th September 2020) referred to time required to rerun the VISSIM to correct 'flaws' within the model operation.
53. On 23rd September 2020, the QCs for both WBC and the Appellant teams were invited to the meeting to be held the following day (*only CLM QC for the Appellant joined*).

54. Auditor comments received late afternoon on 23rd September 2020 from WBC and HE, in advance of the morning meeting, which can be summarised as:

i. WSP disputing queue lengths in the base model (v5.2).

ii. In terms of future years modelling, WSP comment that they still hold concerns regarding the spreadsheets siting Sand Lane West flows in 2032 between AM Do Minimum and Do Something.

iii. Priority Rule 1408 coded in the base model but removed from some future years scenarios.

iv. Restating that some signal changes (to green times), arising from the agreed principle of optimisation, were not considered 'logical' e.g. A49/Cromwell Avenue/Sandy Lane West.

v. Lane designations on proposed S+ mitigation package (A49 northbound left-turn lane improvement works to Cromwell Avenue) are not coded into the model with the result that some vehicles occasionally get stuck in the dedicated right-turn lane to Calver Road on Cromwell Avenue.

Also, circulatory carriageway lane designations to reflect current designation, with one lane only for Cromwell Avenue.

vi. The network statistics show the mitigation schemes do significantly improve network performance but that the eastbound off-slip at the M62 Junction 9 may experience grid-lock, arising from the committed mitigation schemes (in the north) unlocking the bottleneck – it is not clear how this improves traffic performance on local roads i.e. feeding into the A49 corridor.

vii. WSP set out issues with growth of demand data appearing too high.

viii. Extension of Sandy Lane West to capture all forecast impact as queuing on this link already extends beyond the extent of the journey time route.

ix. Atkins not signing off the base model (v5.2) without an updated LMVR, although agreed that model was reasonable.

x. Atkins complain that only one spreadsheet provided in the submission so unable to check conversion processes. Furthermore, that no information provided on how the traffic matrices have been converted.

xi. Percentage increases in traffic flows between base and future years modelling are not steady increases as would be expected and range across entries.

xii. Some 'vehicle inputs' experience percentage increase reductions year on year.

xiii. Complaint that not clear if full development profile is not always being used in the future year assessments.

xiv. Atkins confirm that the principle of using the WMMTM16 future years data to derive VISSIM future years inputs is appropriate.

xv. Queries regarding Use of Modifications and Network Coding.

xvi. Note impact at M62 Junction 9 in 2032 and request mitigation to be modelled for that year.

xvii. Regarding the proposed S+ package, as per point (v) above, lane designations for A49 northbound left-turn lane improvement works are not coded into the model with the result that some vehicles occasionally get stuck in the dedicated right-turn lane to Calver Road on Cromwell Avenue.

xviii. Network journey time analysis comments unable to be made as model deemed not fit for purpose, however, suggest that more appropriate for the comparison going forward to be made between DS+Committed/Proposed Mitigation against Do Minimum+Committed Mitigation.

55. The meeting between HTp, Modelling Group, WBC, WSP, HE and Atkins on 24th September 2020 covered the following:

i. HTp carried out quick high level review on audits issued 23rd September 2020 and note that the VISSIM is validated against journey times and turning counts, not queues and that there is no UK standard for queue length validation. Furthermore, that the model is designed to provide a comparison that shows the impact of the Peel Hall development and assess if mitigation sufficient.

ii. HTp dissatisfaction of delay to meeting as many of the points and requests for information raised in the audits could have been dealt with prior to the start of the inquiry, particularly requests for LMVR and information on the agreed procedures for matrix conversion.

iii. No further issues with spreadsheet data input-output for the model evident.

iv. Agreed principle of signal optimisation is sound and arises from the changes in flow profiles in and between the future years. The optimisation of green times is provided to give an indication of the level of network performance rather than be

prescriptive to future signal engineers. The signal timings are optimised for the Do Minimum reference case not the Peel Hall.

v. Expectation from the Appellant team from their high level review was that a response could be provided to all points raised in the audits, any of which were considered to be straight forward explanations.

vi. HE and WBC confirmed they can provide responses within three weeks of receipt of submission(s).

vii. Atkins requested that the number of scenarios tested be condensed and it was agreed that the package would be streamlined to the relevant comparison models required.

56. The draft meeting minutes were provided on the 24th September 2020 with the final iteration circulated on 1st October 2020 confirming the Appellant decision had been taken to re-run the base model for agreement with WBC, with subsequent future years modelling, and that, despite the 14th December 2020 backstop set by the Inspector, the Appellant team aimed to submit the revised modelling package for audit by 30th October 2020.

57. As set out above, during this time from 8th to 24th September 2020, further modelling was carried out to assess the M62 Junction mitigation requirements.

58. Therefore, the situation at the end of September 2020 was that, whilst the Appellant team and WBC could not fully agree with each other on all points raised in the audits and at the meeting, a final push was to be made to get WBC approval for the base modelling to ensure that we could move forwards together and agree an appropriate mitigation package.

October 2020 to Submission of This Evidence

59. WBC suggested on 1st October 2020 that, rather than provide a complete modelling package at the end of October, HTp concentrate on updating, submitting and agreeing the base model with WBC first.

60. On the 9th October 2020 WBC requested to use our VISSIM base model for their own modelling of the Peel Hall impacts. HTp confirmed by replying that Satnam Millennium Ltd do not consent for use of their VISSIM model and supporting data by WBC to avoid the scenario of having two potentially competing models in front of the inquiry. HTp also confirmed to the split approach suggested by WBC regarding the issue of the base model for agreement before forecast years, and further set out that the aim of the Appellant team was for issue of the base model 15th October 2020.
61. In an effort to reach agreement with WBC for their sign off the base model given their reliance on queue lengths, despite this not forming part of the agreed methodology or have any UK standard for validation or calibration, the base model was re-assessed in terms of the in-built AECOM coding. VISSIM base model (v6) subsequently issued on 16th October 2020, following the independent audit.
62. HE confirmed by email that the base model (v6) is acceptable on 2nd November 2020.
63. WBC respond to base model (v6) on 2nd November 2020 with caveated acceptance, raising issue of lane designations of southern circulatory carriageway markings at the A49/Cromwell Avenue/Sandy Lane West junction and suggesting the base models needs to be re-run before they would sign off.
64. Following an email from HTp on 6th November 2020 rebutting the need for changes to the base model (v6) based on empirical evidence and clear observation from 2019 (base year), WBC accepted it was not appropriate to rerun base on 13th November 2020. WBC chassed for the future years modelling despite only just confirming base acceptance.
65. In terms of the forecast years modelling, work and analysis was ongoing from the issue of the base model up until 2nd December 2020, when the future years modelling package was submitted.
66. WSP request information regarding base year queue lengths and signal timings on the 4th December 2020, as timescales were 'tight' and it would be 'quicker' for HTp to run the data off and provide than WSP. HTp respond on 8th December 2020 setting out our understanding that the deadline of 14th December 2020 was for the Appellant to submit their modelling package, which had been achieved. Furthermore, that, in essence, WSP had the data they required to hand within the submission package and would be best placed to extract this information expediently and would no doubt do so during the course of their detailed audit.

67. Atkins requested information regarding future year spreadsheets on 7th December 2020 (responded to on 8th December 2020) and further information/clarification in respect of mitigation package, flow conversion spreadsheets, development scenarios tested, WMMTM16 data, Former Parkside Colliery documents from the planning portal, third party included mitigation and Road Safety Audits, between 8th and 10th December 2020 which was responded to by return either in email or by telephone.

68. On 8th January 2021, WBC provided WSP's audit (TN12) of the future years modelling. This concluded that the VISSIM was technically sound but summarised a number of points in respect of development impact as follows:

    i. Is it reasonable to expect that forecast demand in VISSIM should be consistent with SATURN WMMTM16, in all zones?
    ii. Does the M4 Mitigation at Cromwell Avenue create a demonstrable safety issue for merging vehicles?
    iii. Is the signal timing optimisation at the M62 Junction 9 appropriate?
    iv. Is the signal timing optimisation at the A49/Cromwell Avenue/Sandy Lane West junction appropriate?
    v. Do the comparisons of latent demand and queue lengths on Sandy Lane West indicate development impact that cannot be mitigated in the PM Peak in 2027 and 2032?
    vi. Do the levels of latent demand and queue lengths on the A50 Long Lane indicate that the impact of the development on this link cannot be adequately assessed?
    vii. Is the concern regarding latent demand appropriate?
    viii. Is the zone distribution from D to G (raised in WSP TN12) of significance?

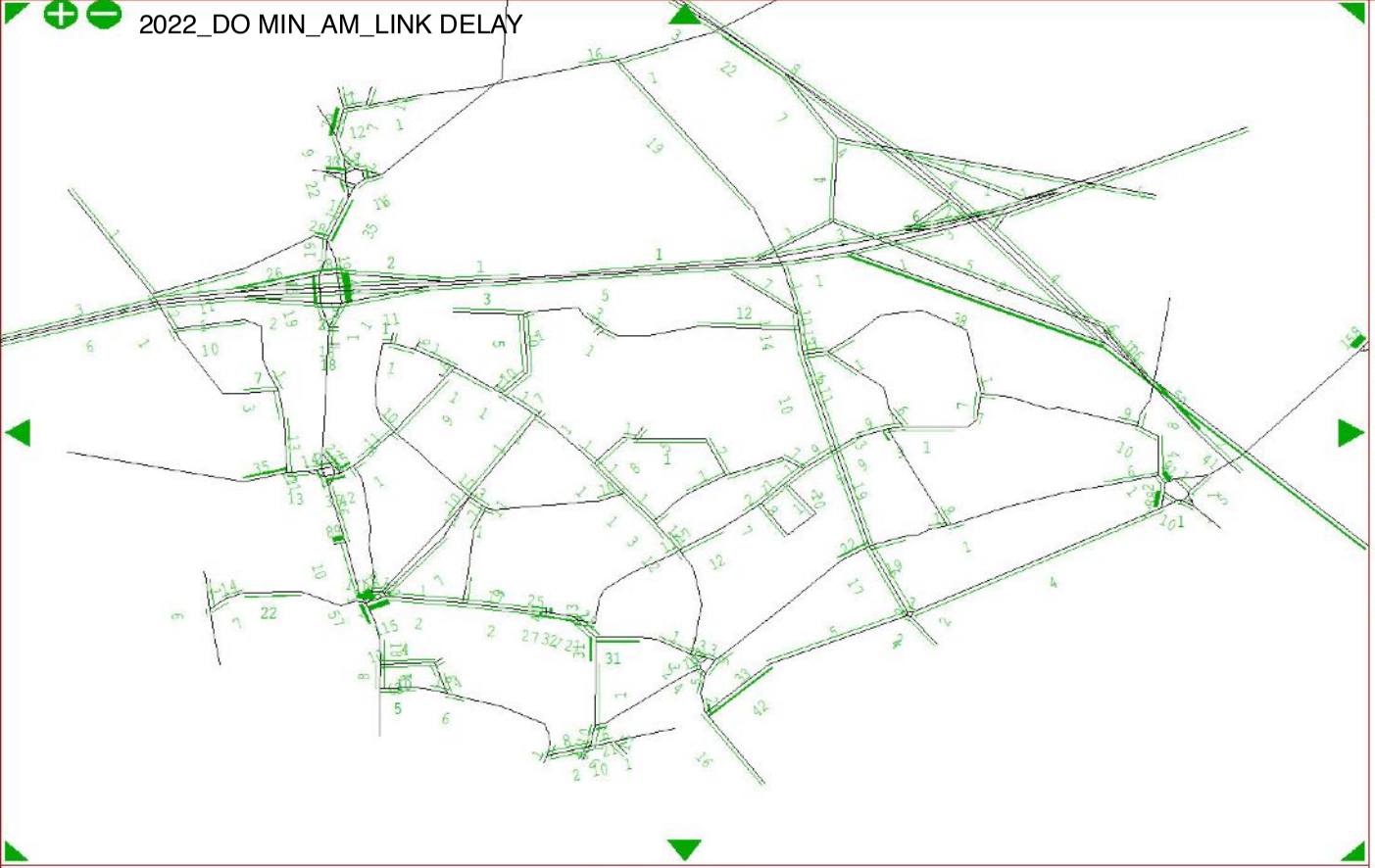
69. HE provided Atkins' audit response on 12th January 2021, which can be summarised as agreeing the future years modelling is technically sound, but awaiting confirmation from WBC regarding the M62 Junction 9 signal timings proposed in the modelling.

70. Our response to WBC regarding Table 6 of WSP's TN12 was provided 22nd January 2021, following the virtual meeting of 18th January 2021. This set out that the matters raised were not significant and arose from the agreed flow conversion methodology.

71. As can be noted from the Inspector's notes of the Case Management Conference (25th January 2021), HE no longer object to the appeal proposals on the basis that mitigation would be provided to the eastbound M62 on-slip road and gyratory. HE are satisfied that the scheme proposed is proportionate and provides nil-detriment, and furthermore, that any outstanding matters could be addressed through a Stage 2 Road Safety Audit and controlled through planning conditions.

Appendix DT/V4

WMMTM16 Node and Link Delay Plots and Node V over C Plots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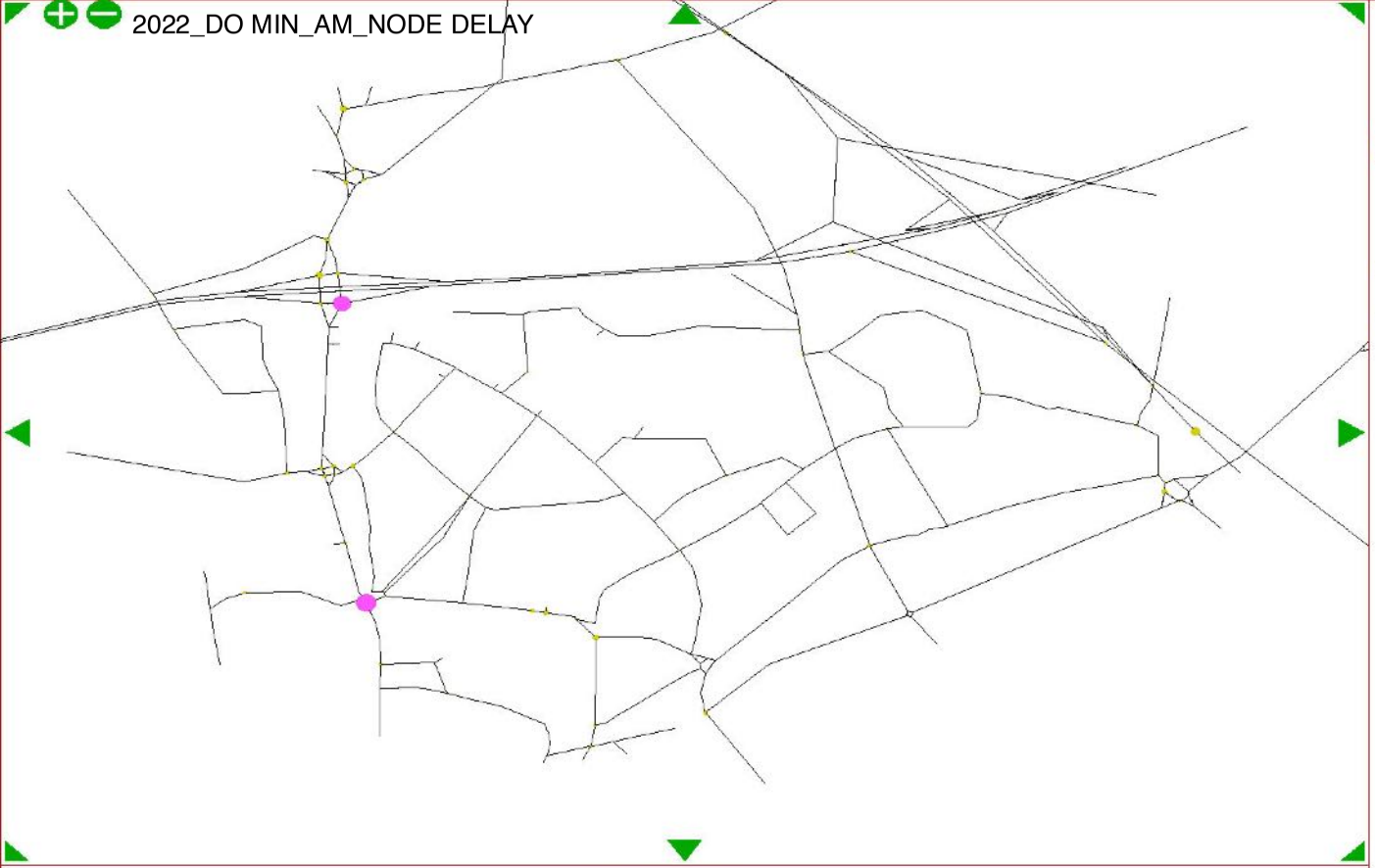
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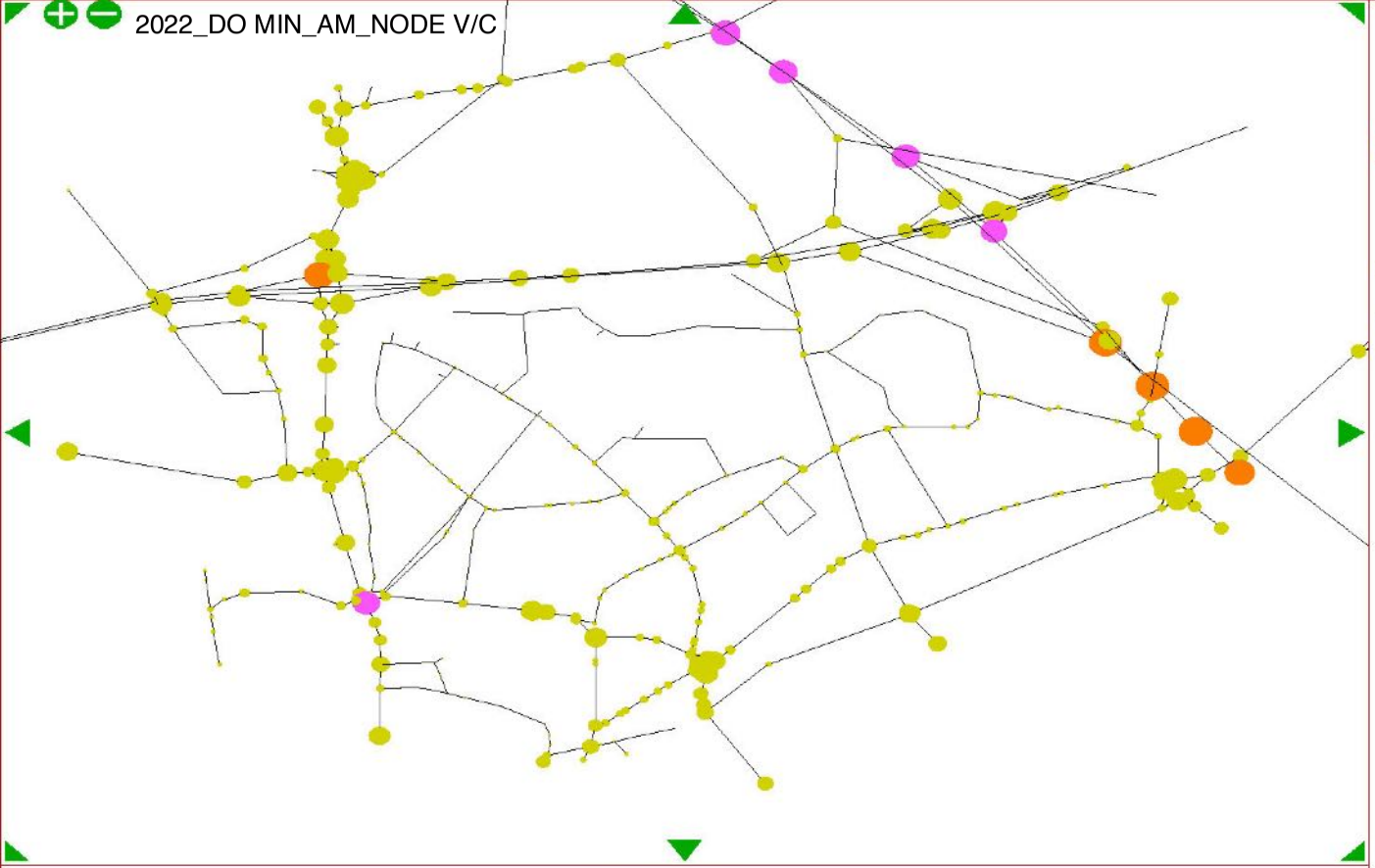

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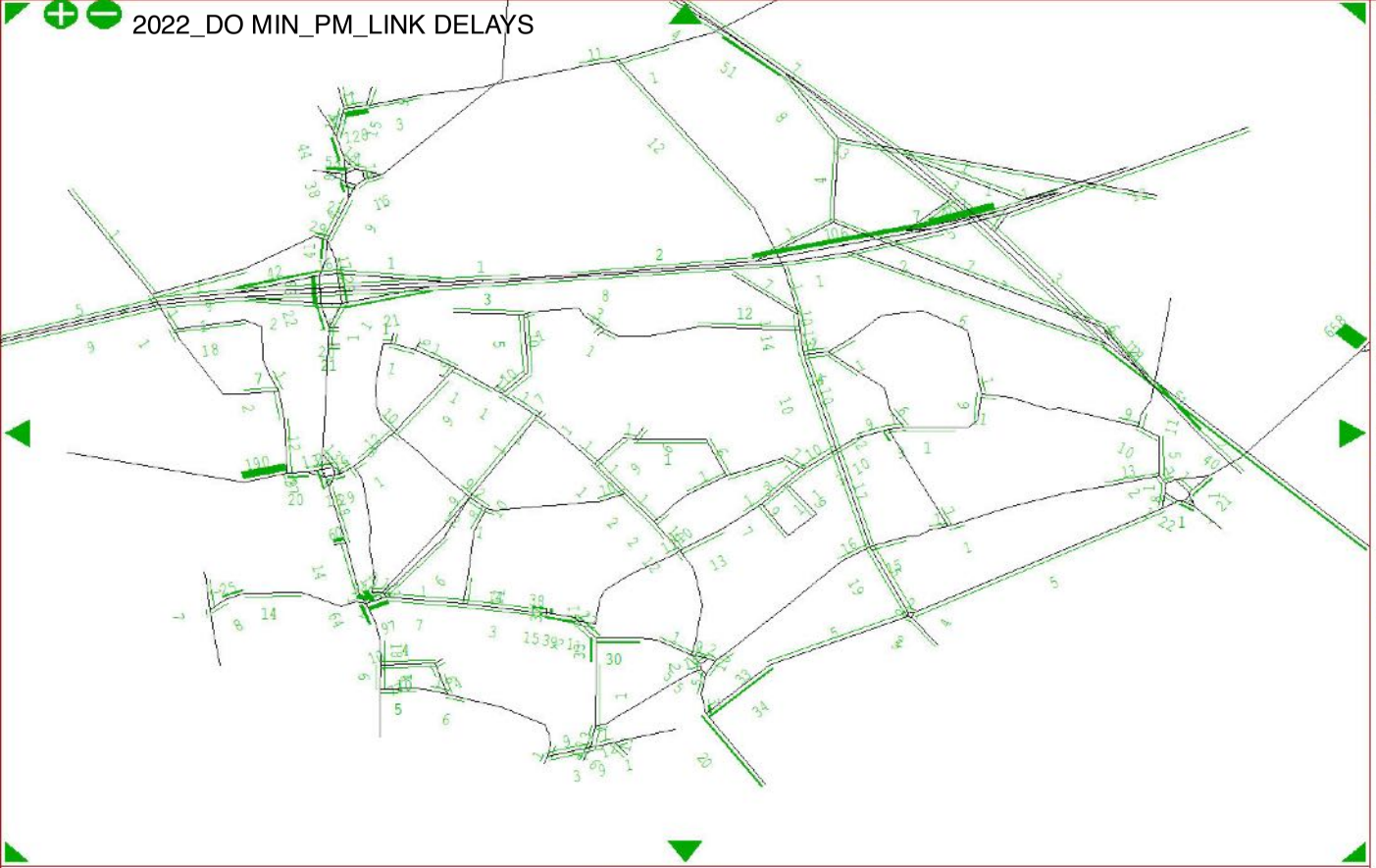

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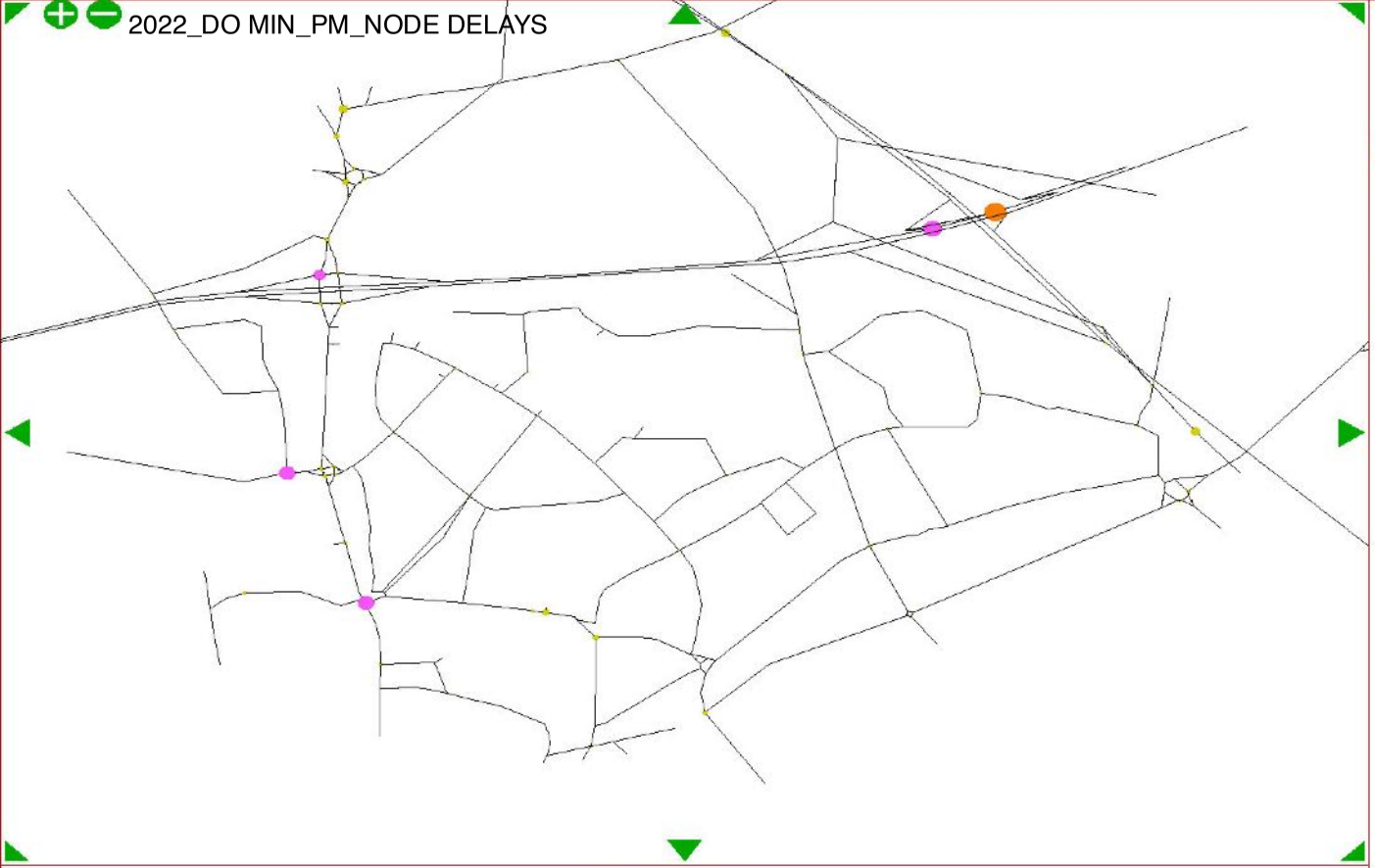
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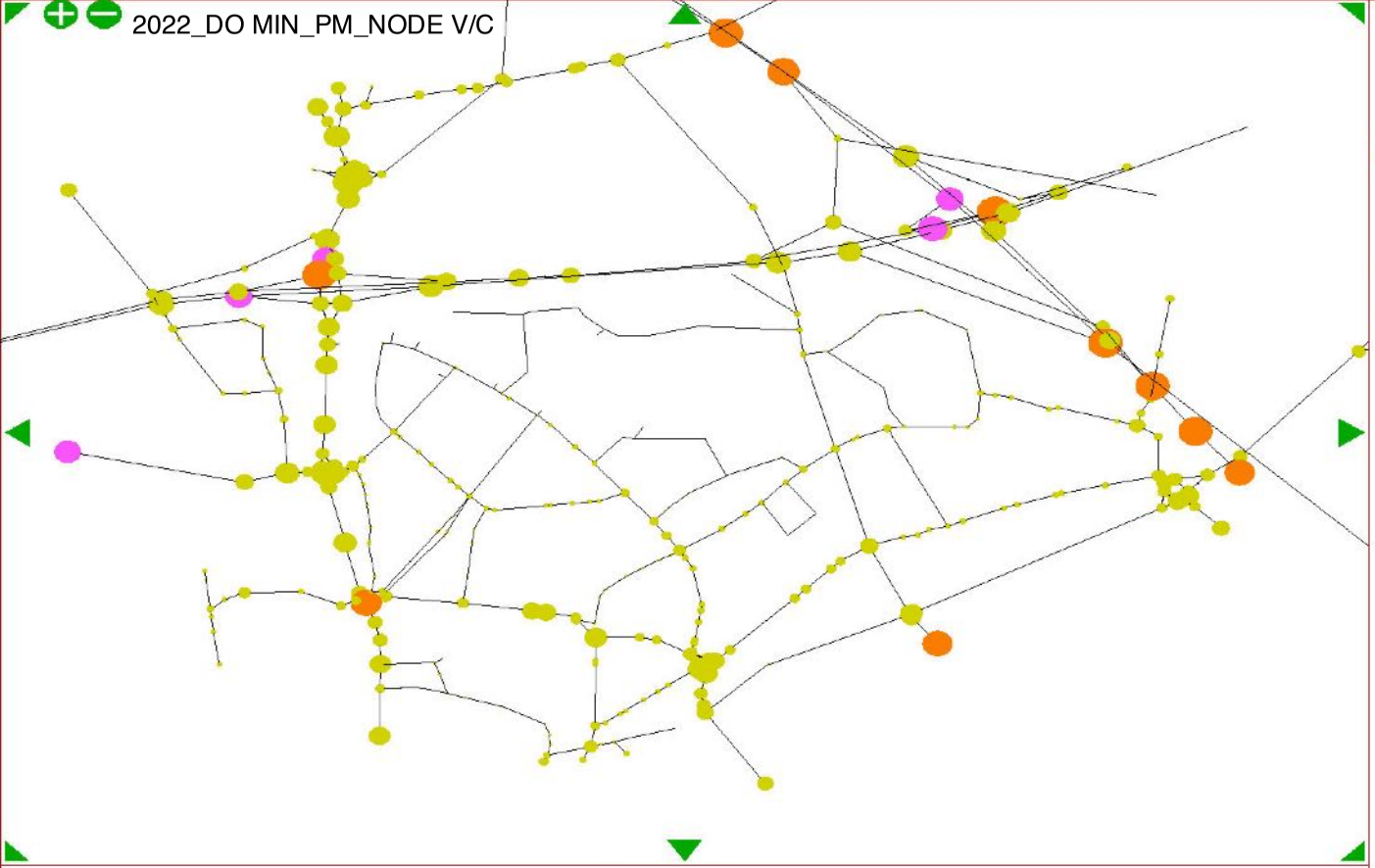

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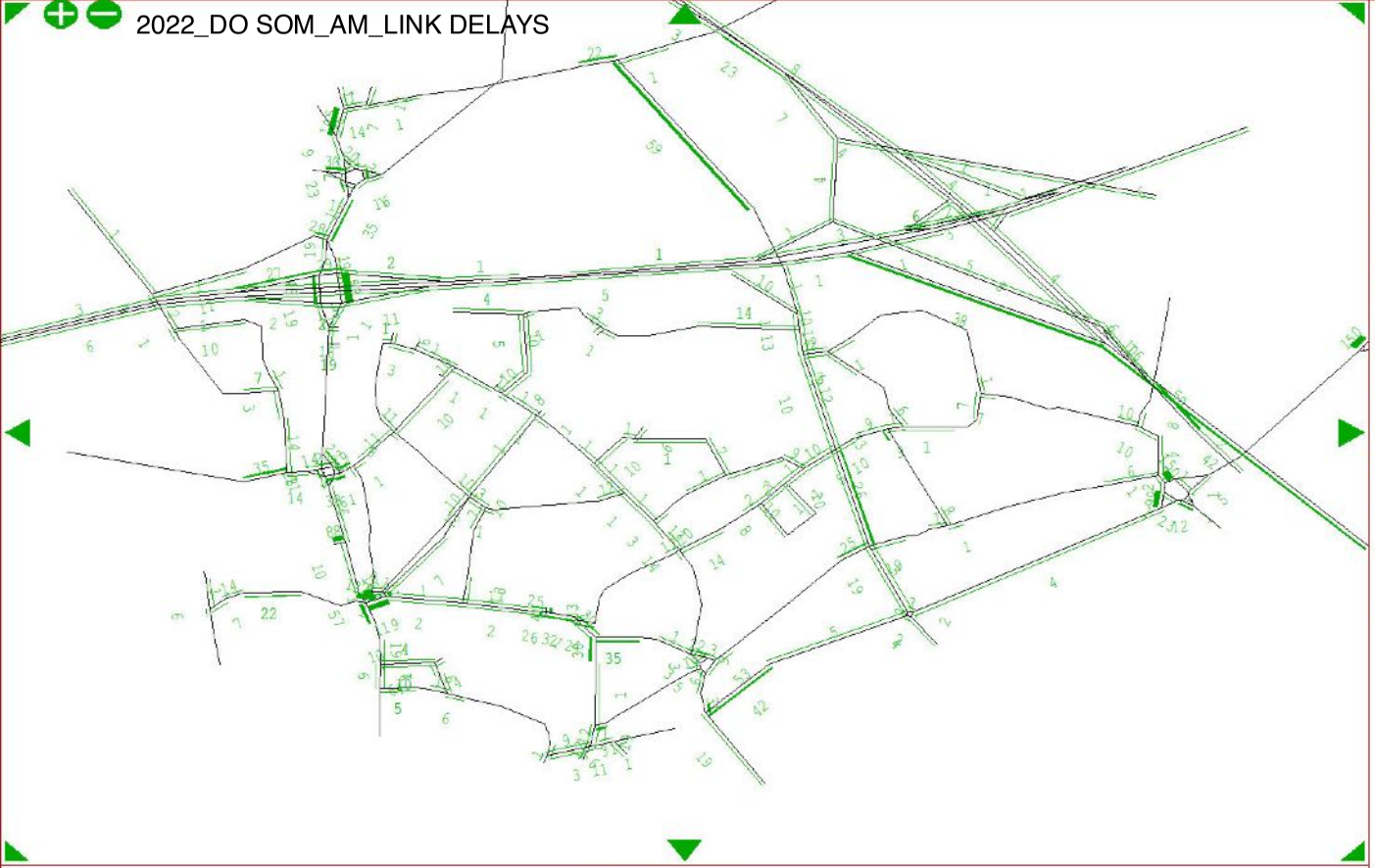
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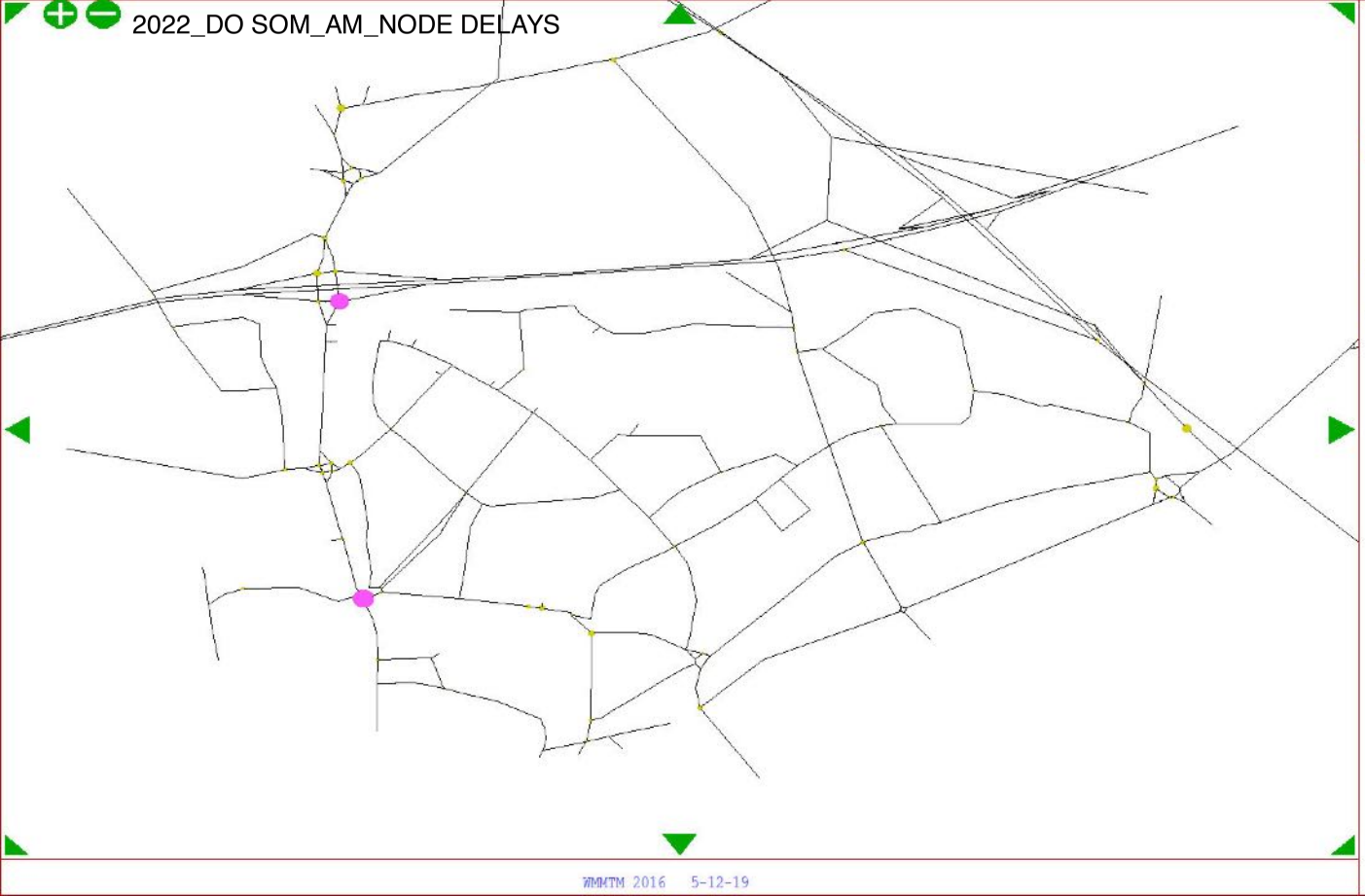
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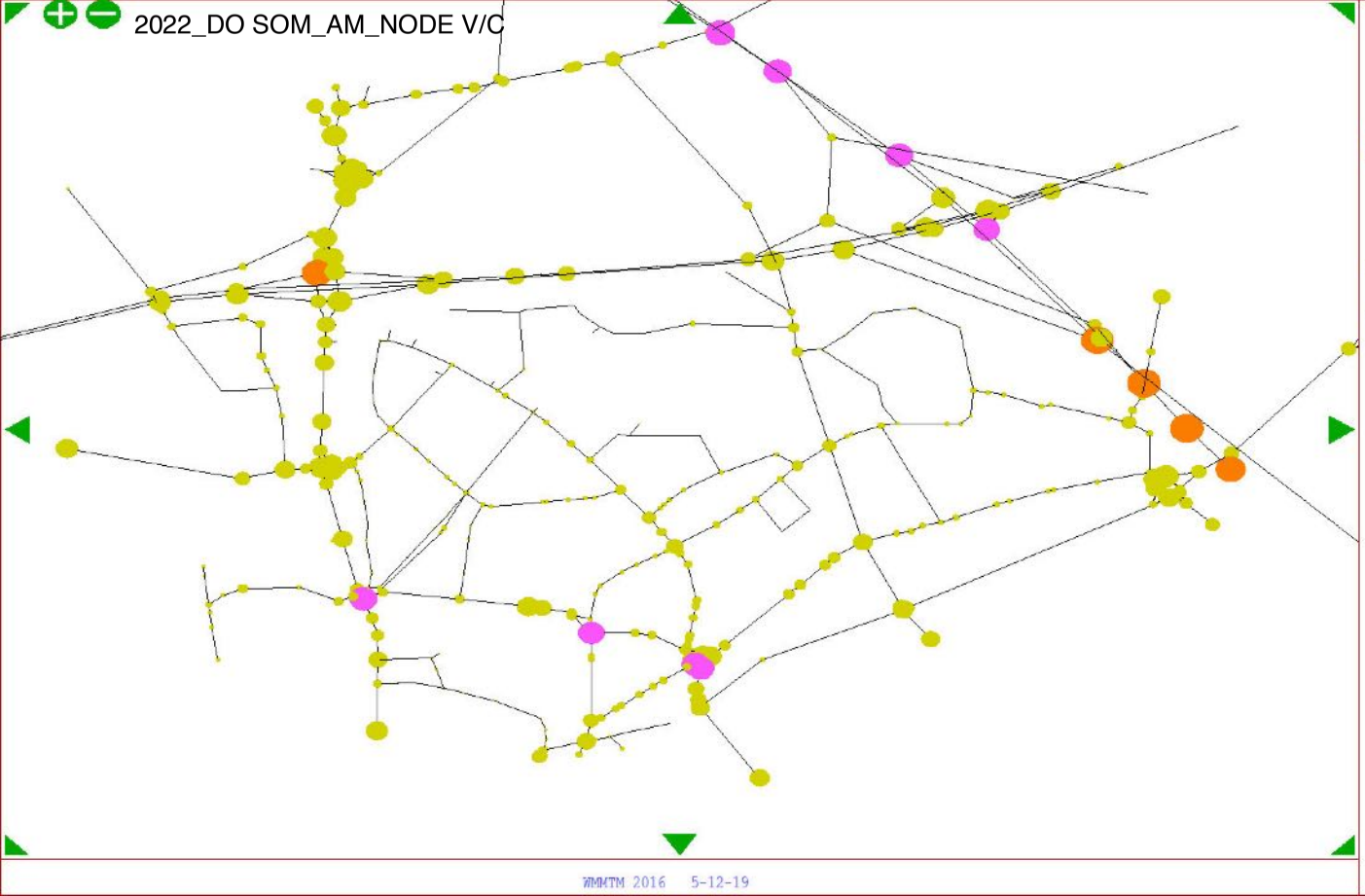

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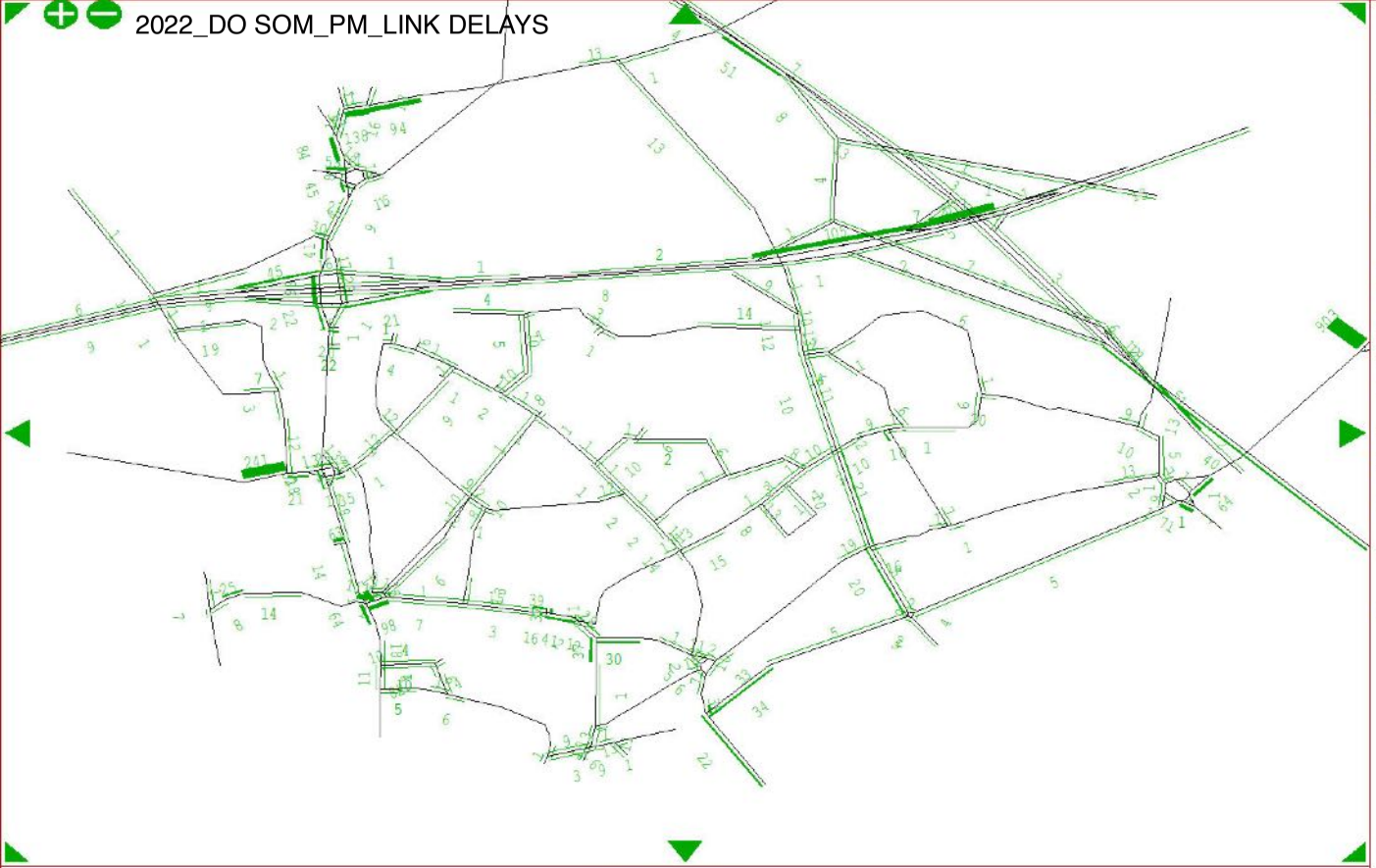

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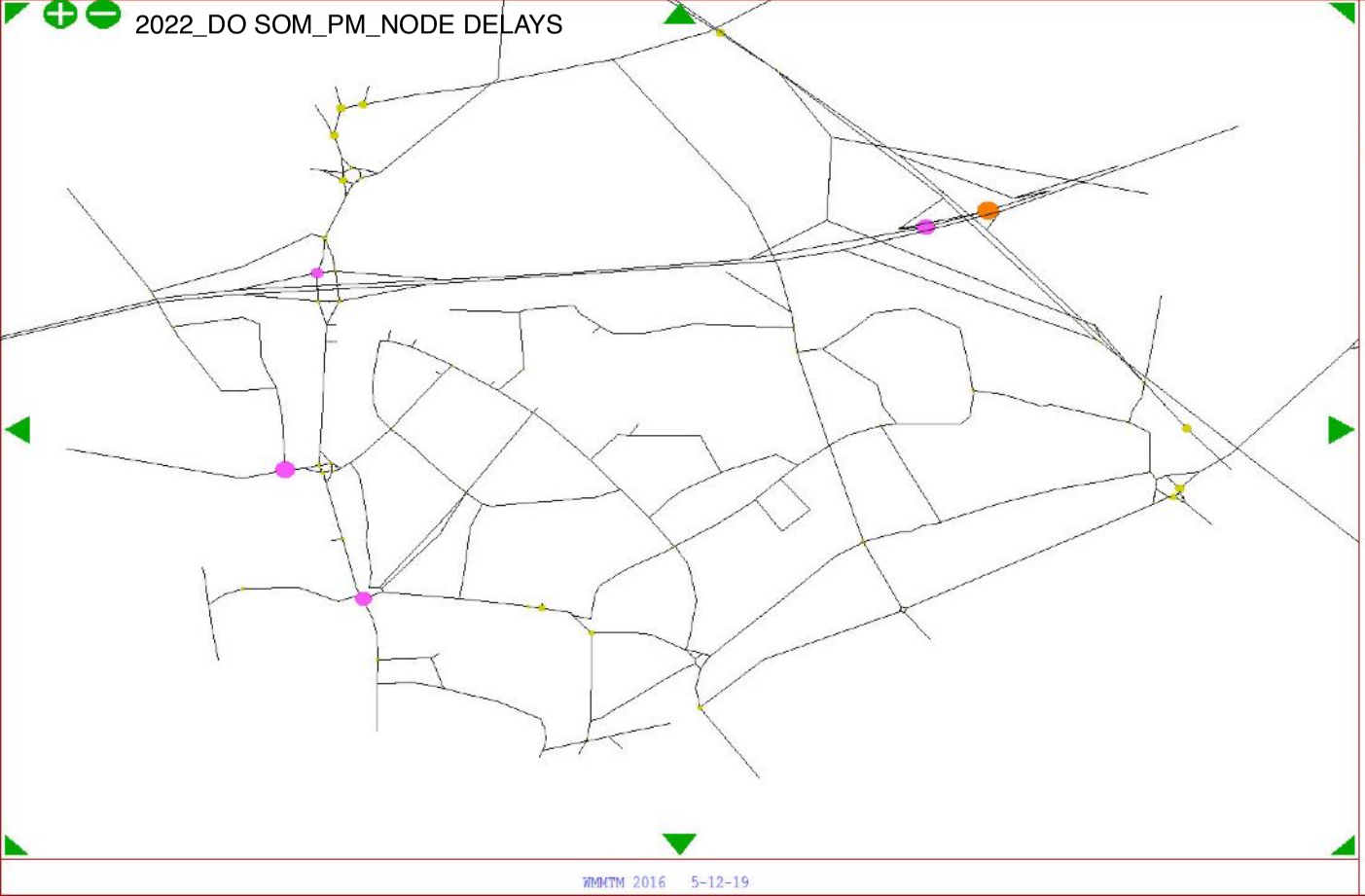
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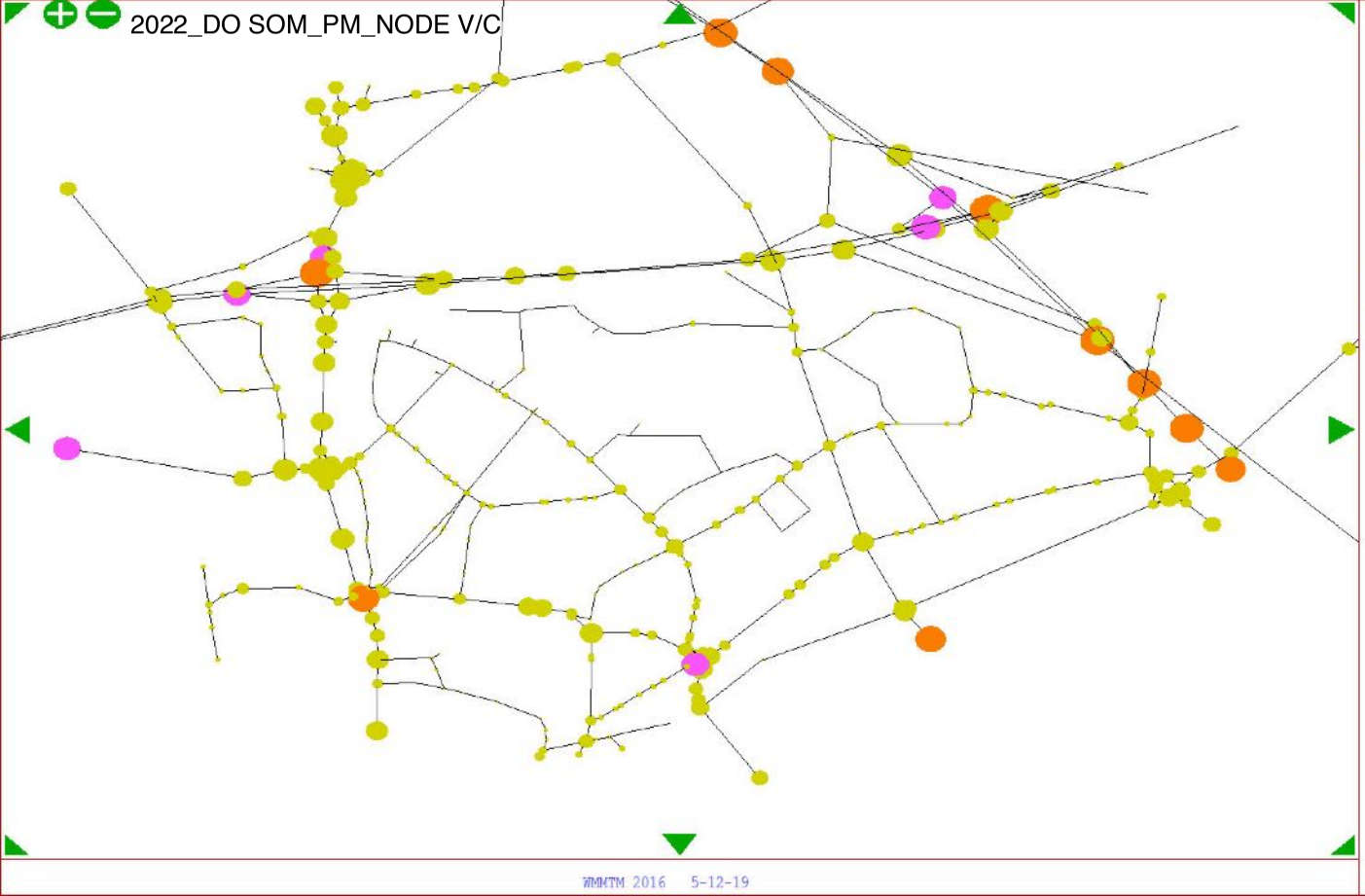

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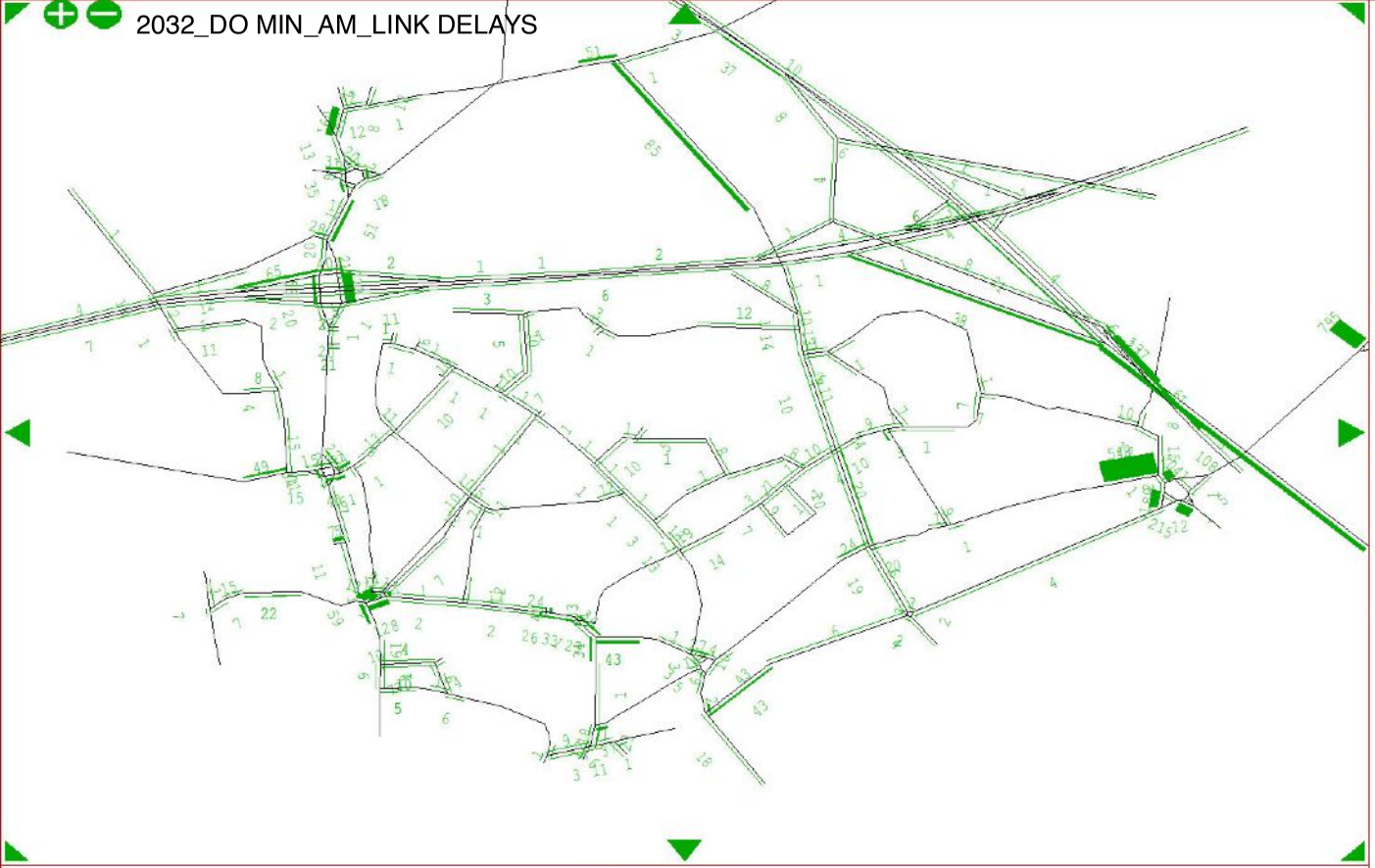
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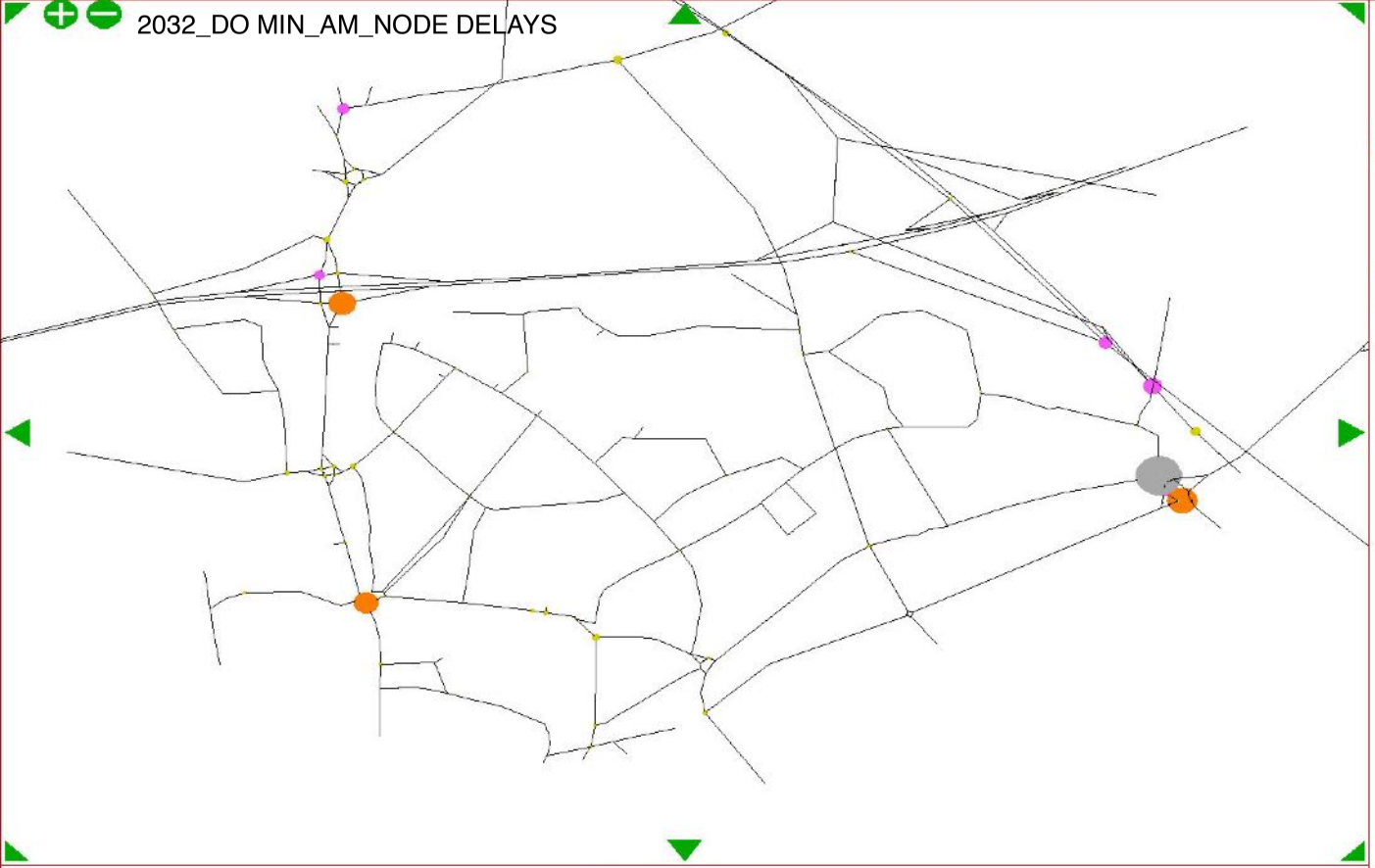
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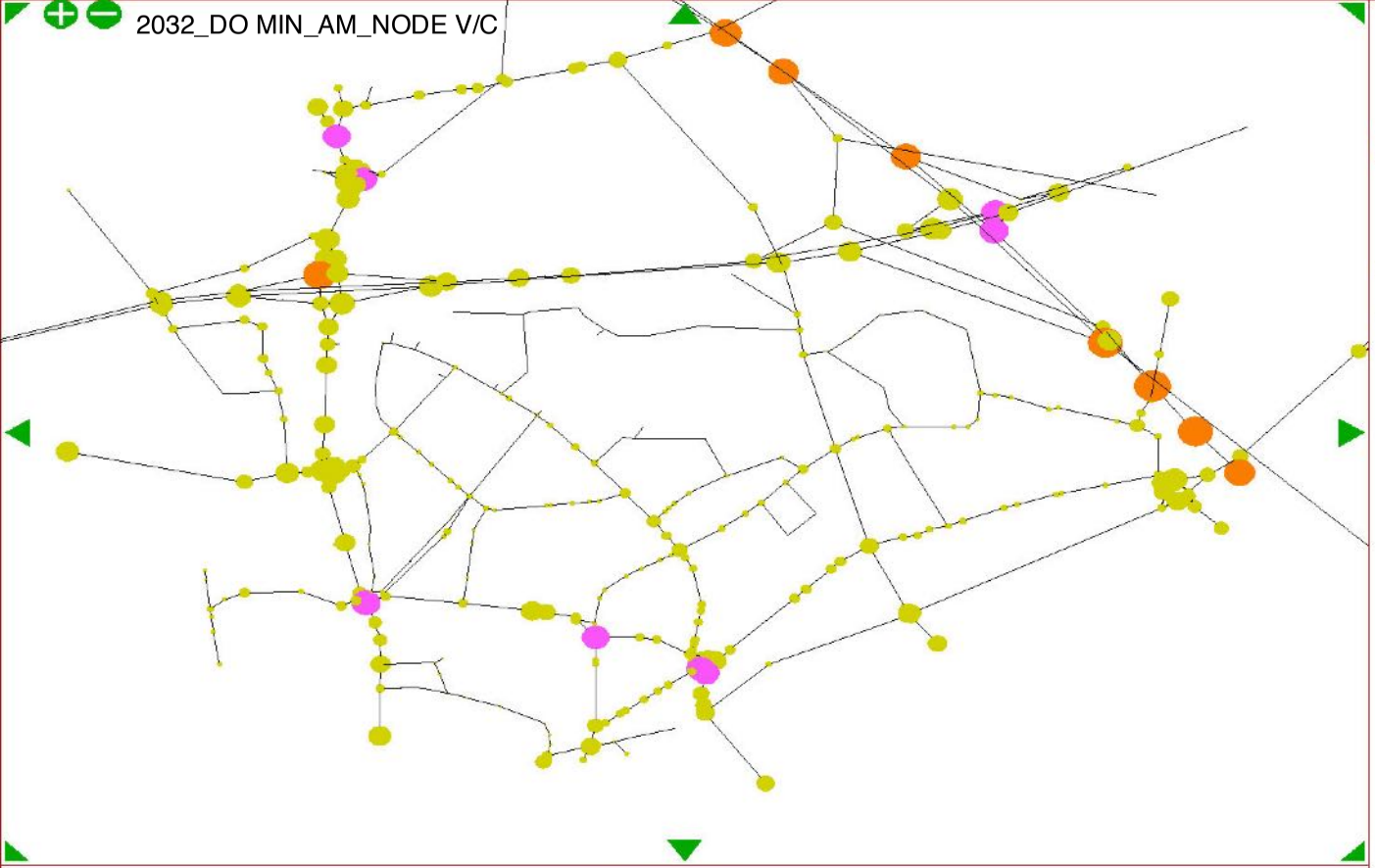

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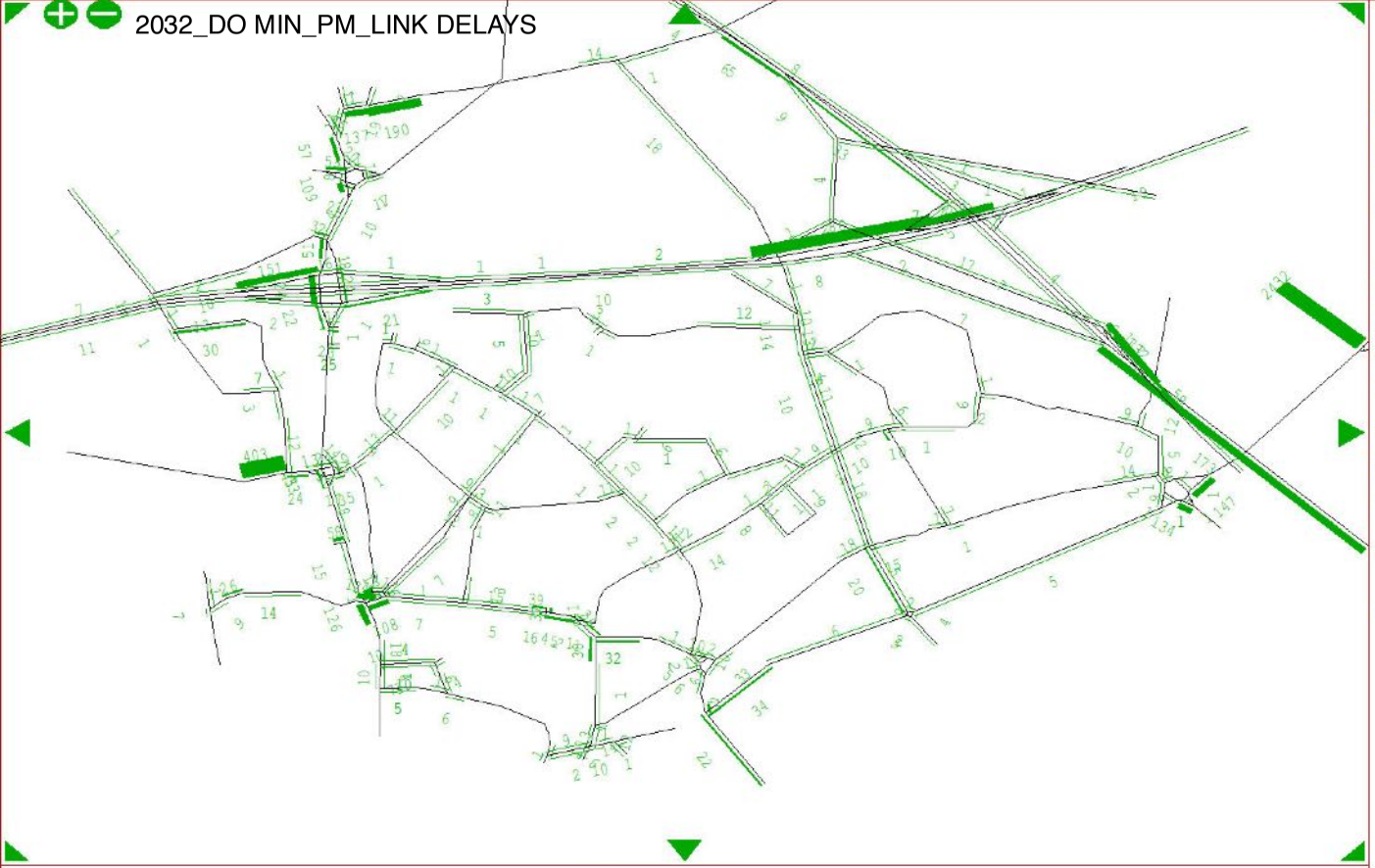

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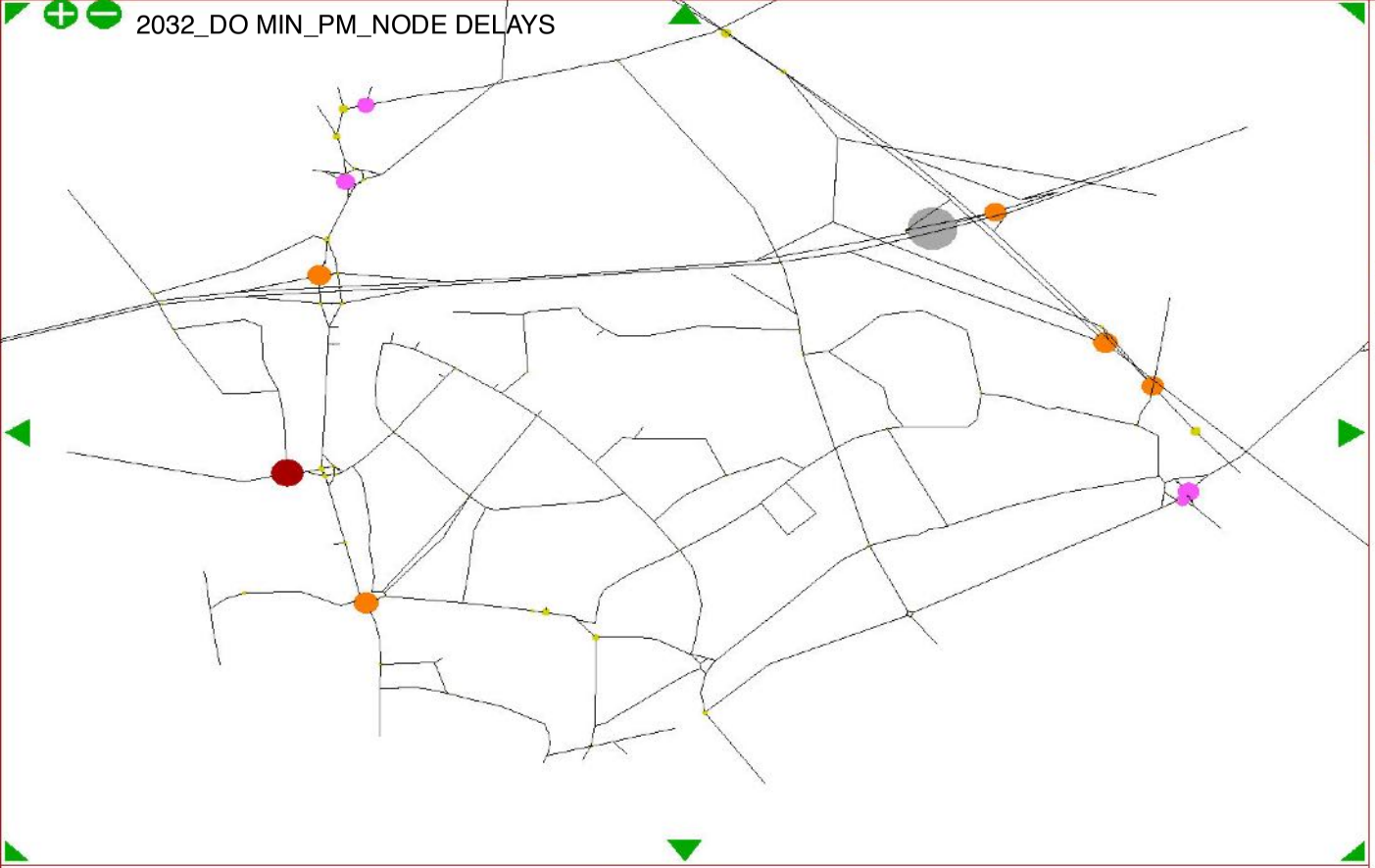
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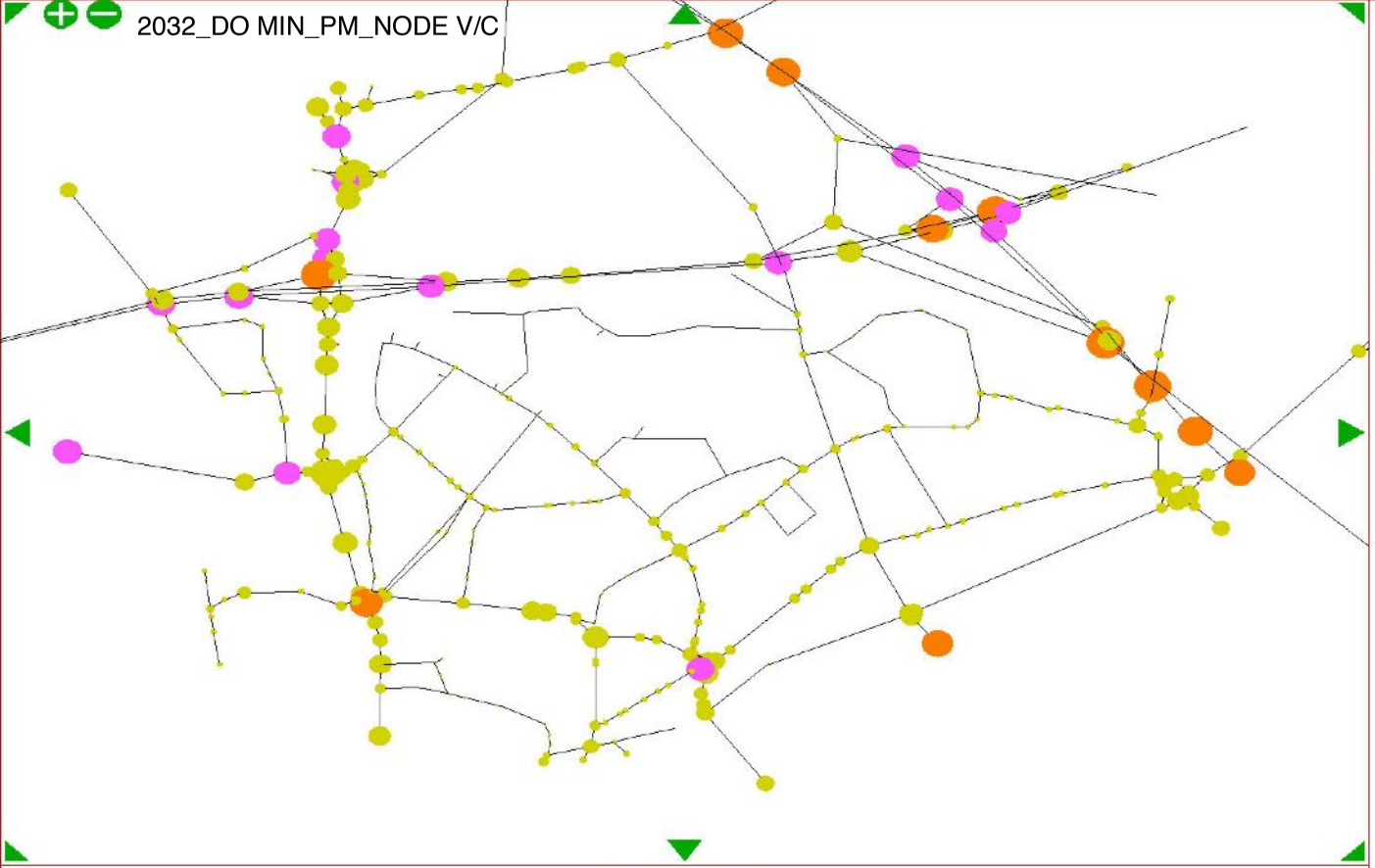
WMMTM 2016 13- 9-19



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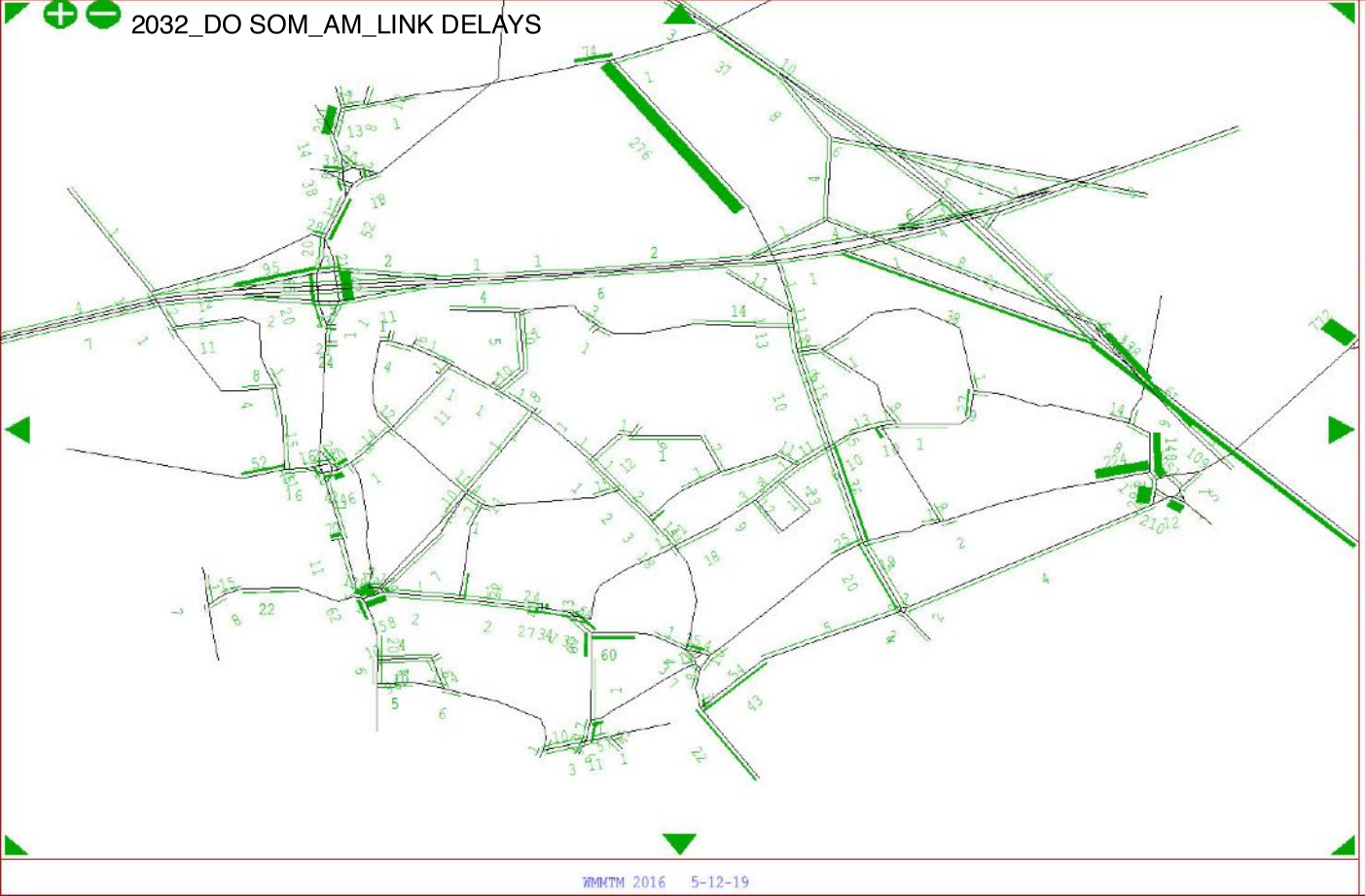

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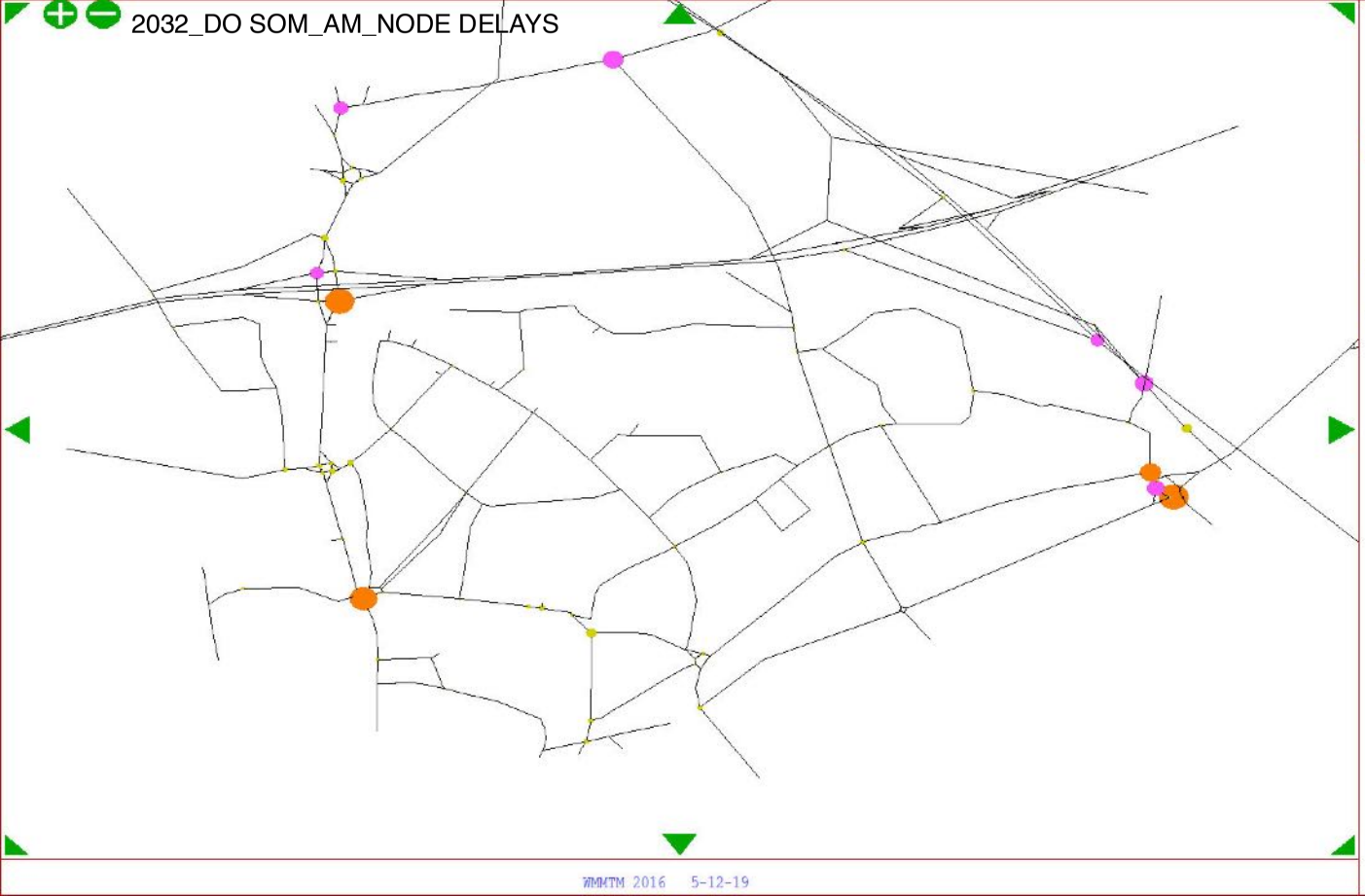
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Radius:
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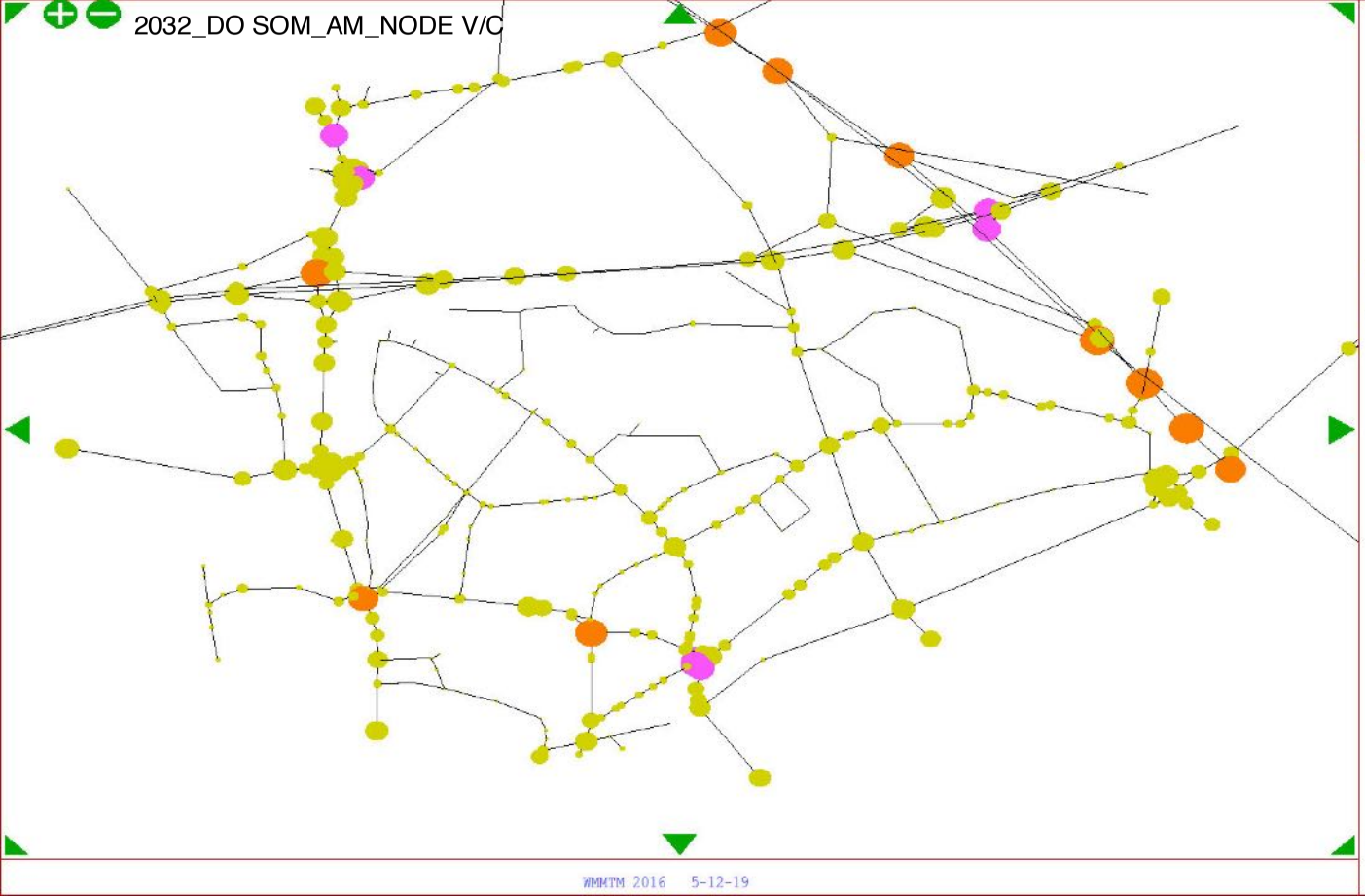
WMMTM 2016 5-12-19



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& Options:

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Bndwdh units 25.0 /mm ?

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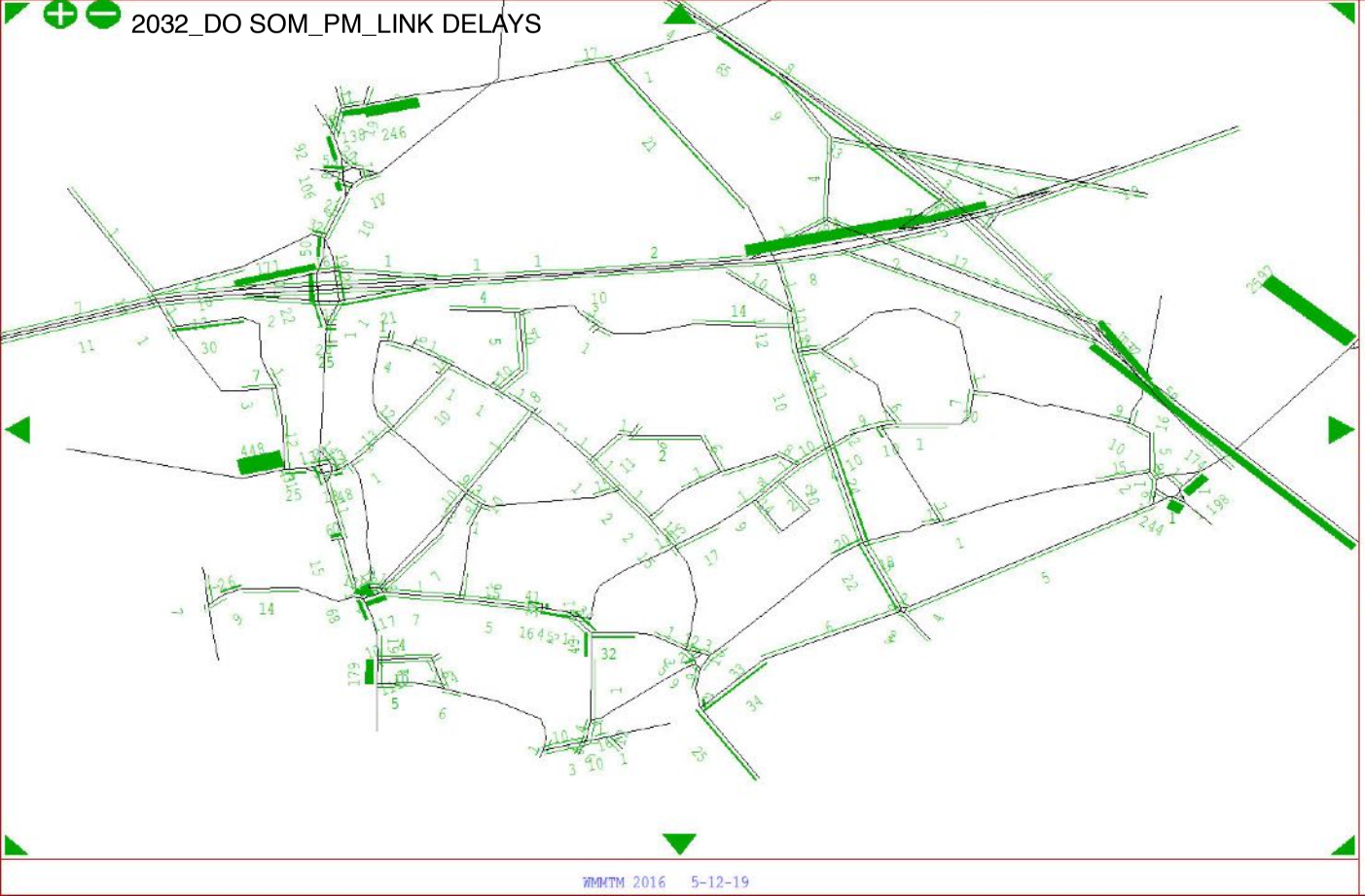
+ Menu bar!



Link Annotation Display Options:

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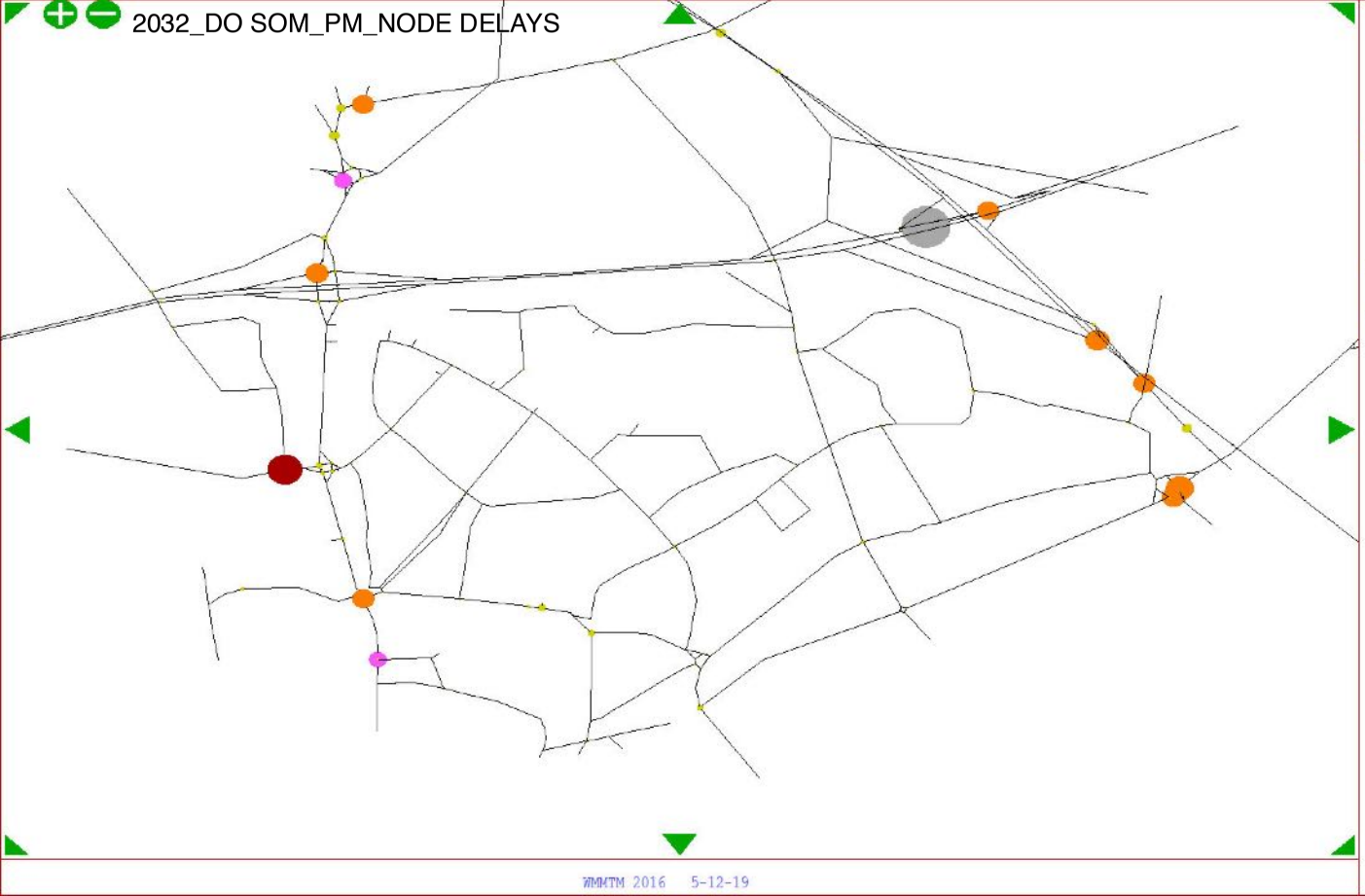
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Radius:
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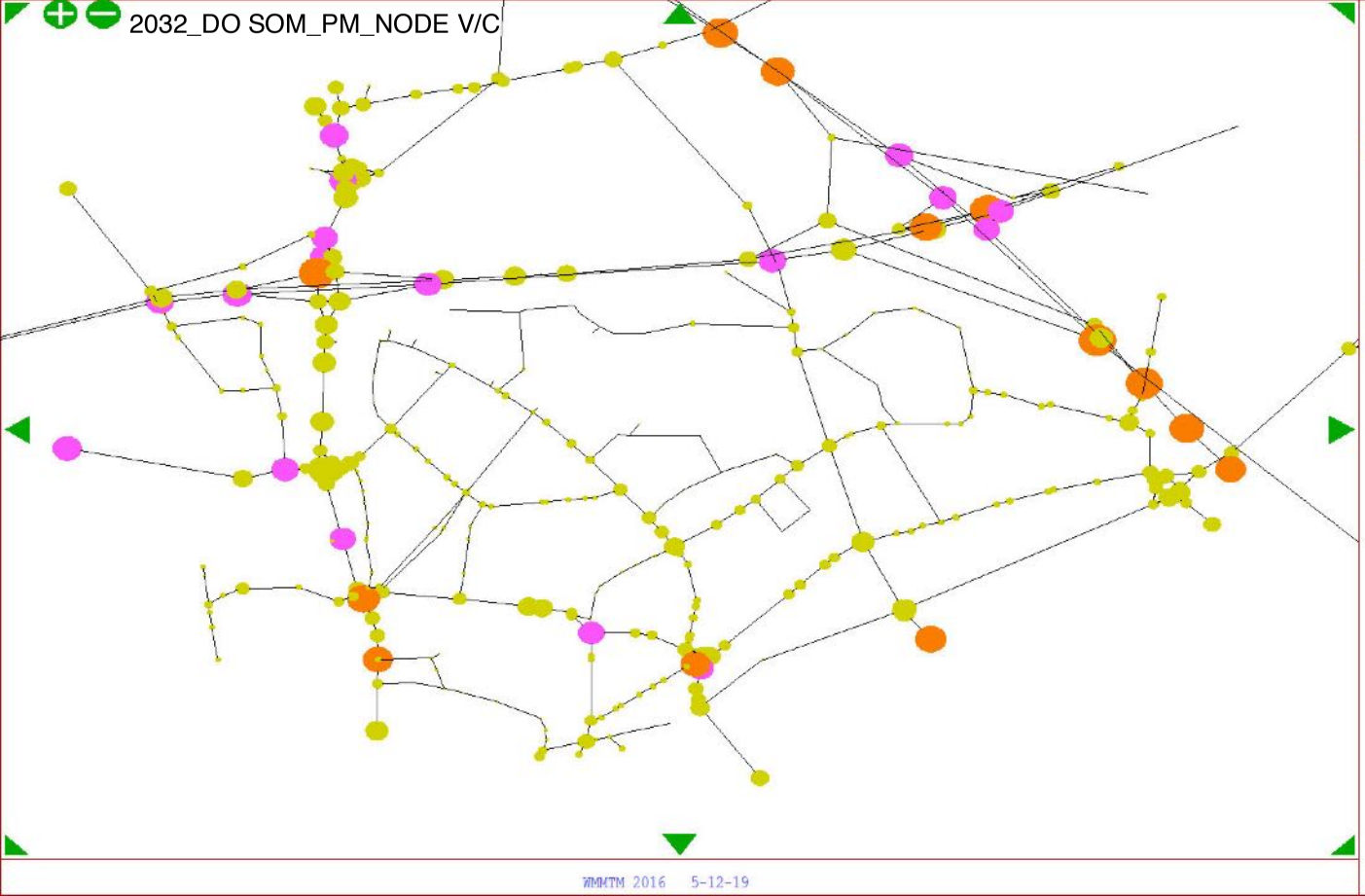
WMMTM 2016 5-12-19



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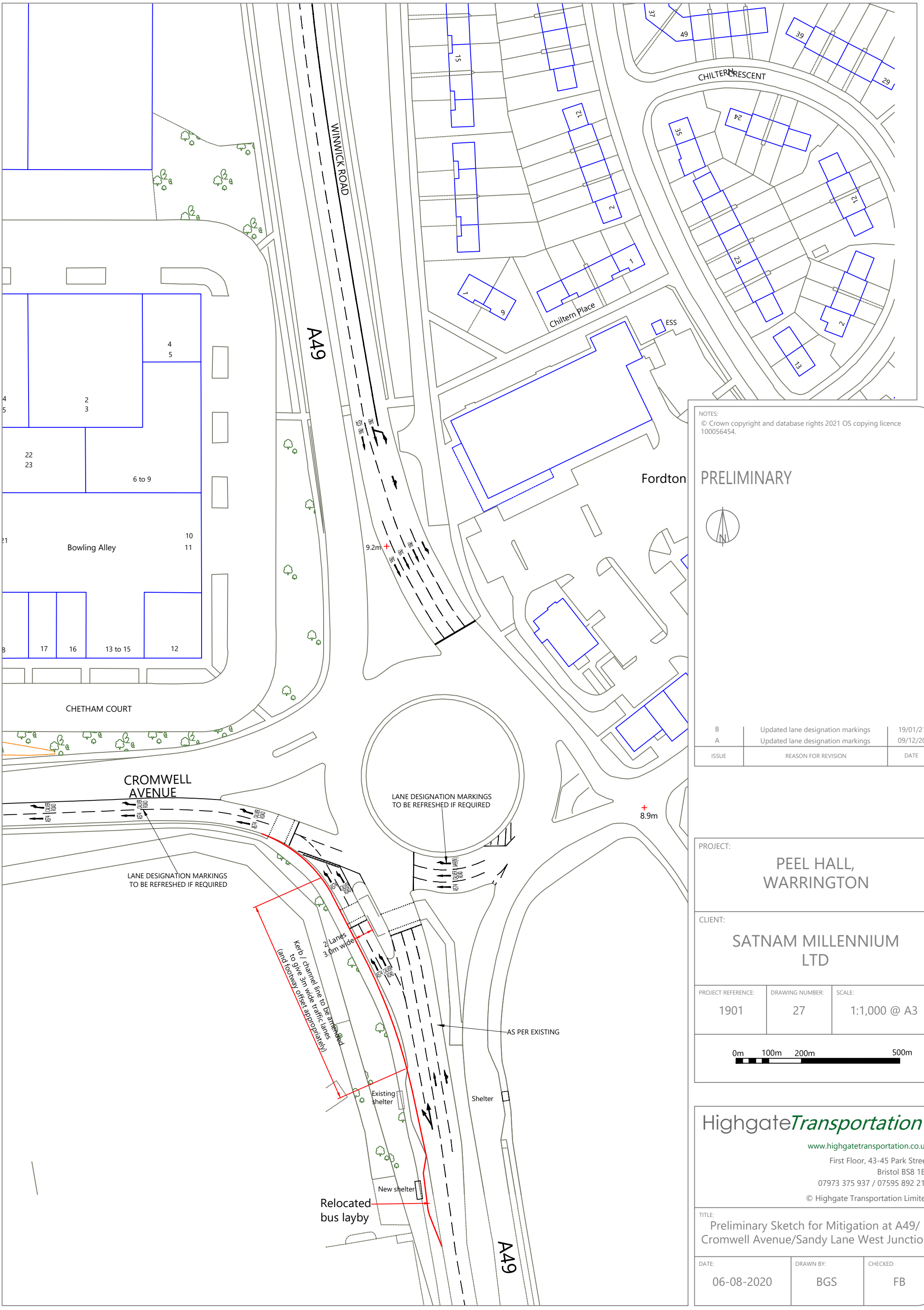
Appendix DT/V5

Proposed Peel Hall Mitigation



NOTES:

PRELIMINARY

ISSUE	REASON FOR REVISION	DATE
B	Updated lane designation markings	19/01/21
A	Updated lane designation markings	09/12/20

PROJECT:

PEEL HALL, WARRINGTON

CLIENT:

SATNAM MILLENNIUM LTD

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

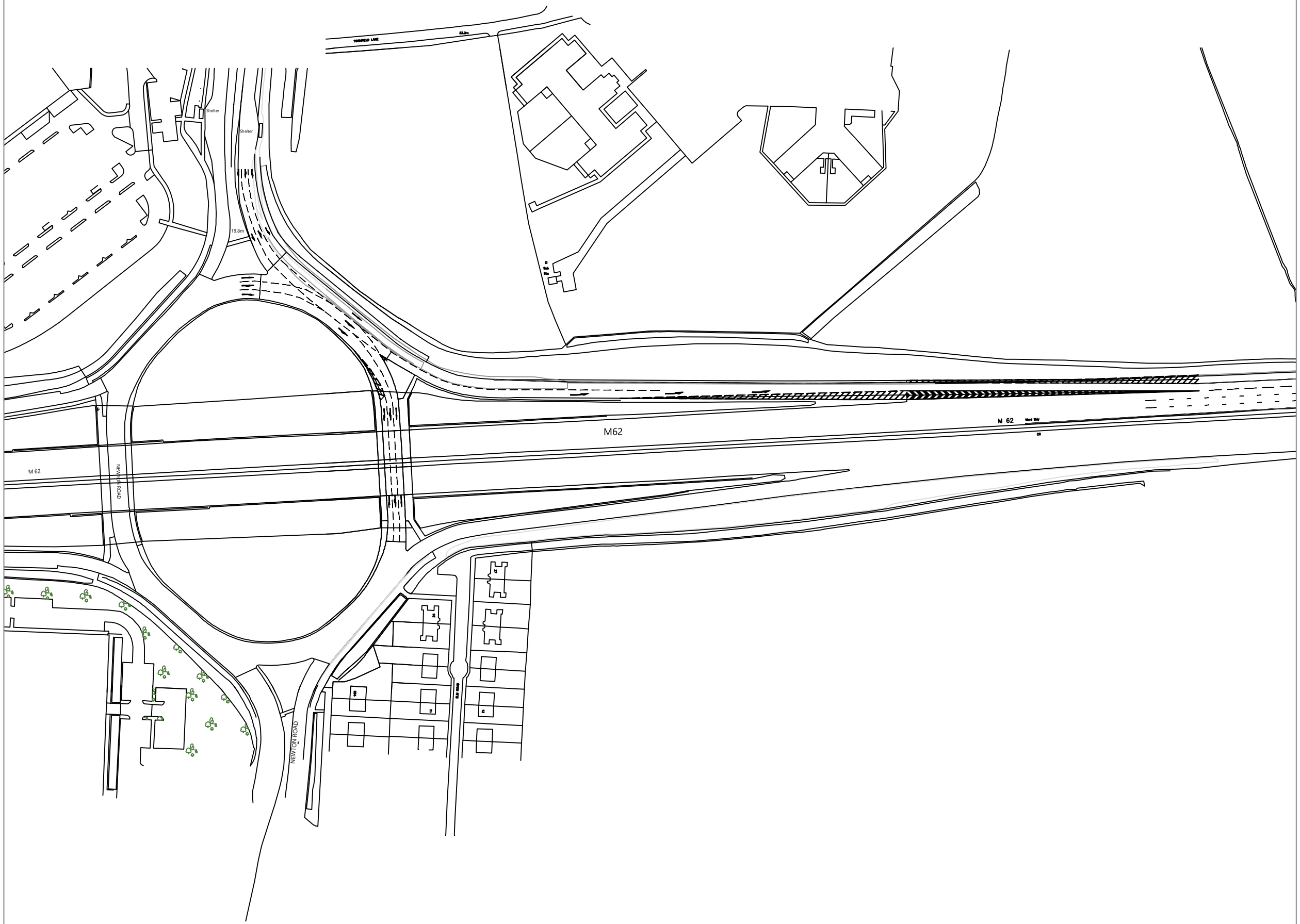
0m 100m 200m 500m

HighgateTransportation
www.highgatetransportation.co.uk
First Floor, 43-45 Park Street
Bristol BS8 1ES
07973 375 937 / 07595 892 217

TITLE:

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

DATE:	DRAWN BY:	CHECKED:
06-08-2020	BGS	FB



NOTES:

PRELIMINARY

Note: Lane markings and arrows revised where necessary

ISSUE	REASON FOR REVISION	DATE

PROJECT:

PEEL HALL, WARRINGTON

CLIENT:

SATNAM MILLENNIUM LTD

PROJECT REFERENCE:	DRAWING NUMBER:	SCALE:
1901	28	1:2,000 @ A3

SHEET:

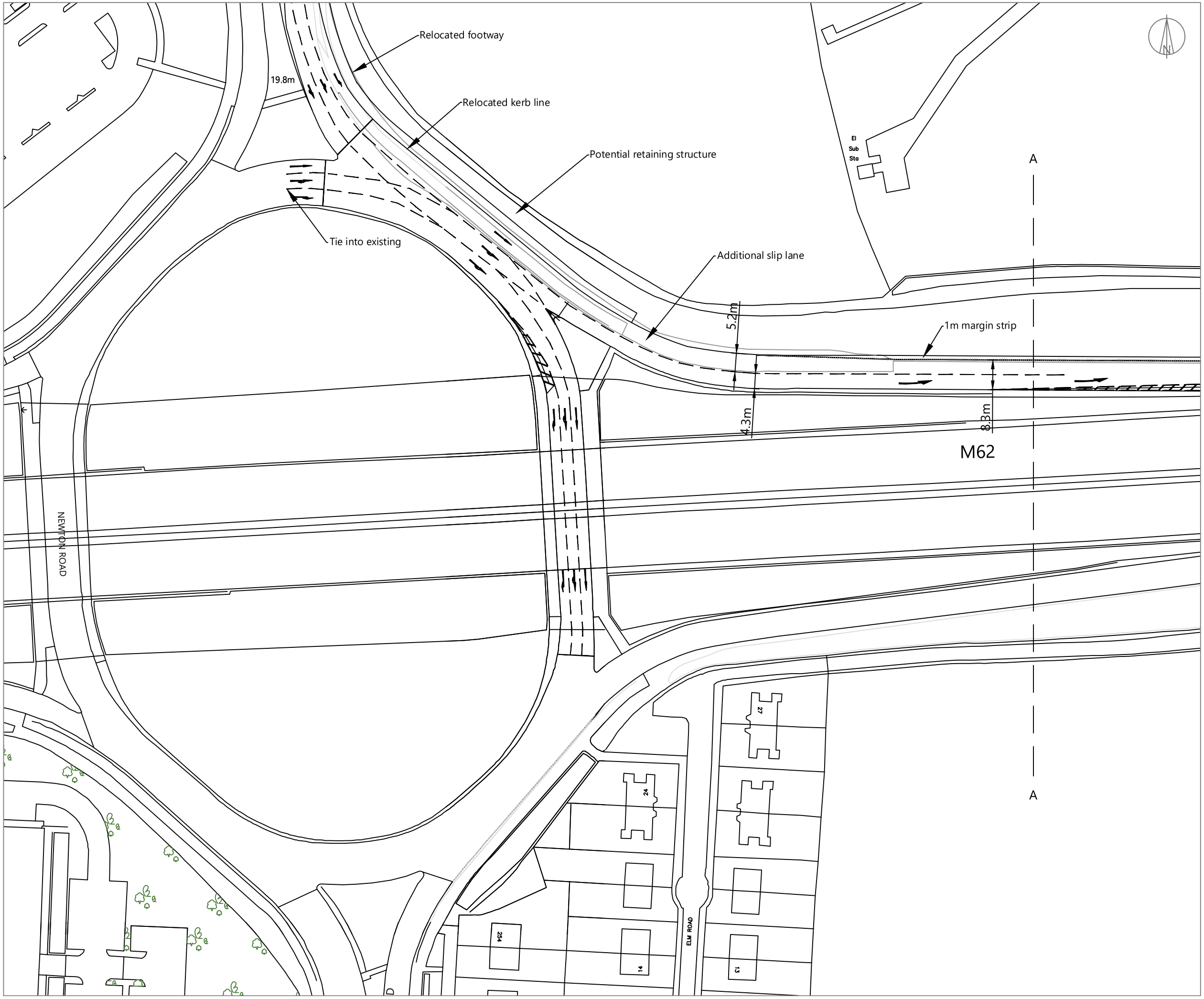
SHEET 1 OF 3

HighgateTransportation
www.highgatetransportation.co.uk
First Floor, 43-45 Park Street
Bristol BS8 1ES
07973 375 937 / 07595 892 217

TITLE:

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

DATE:	DRAWN BY:	CHECKED:
08/09/20	AH	FB



NOTES:

PRELIMINARY

Note: Lane markings and arrows revised where necessary

ISSUE	REASON FOR REVISION	DATE

PROJECT:

PEEL HALL, WARRINGTON

CLIENT:

SATNAM MILLENNIUM LTD

PROJECT REFERENCE:	DRAWING NUMBER:	SCALE:
1901	28	1:1,000 @ A3

SHEET:

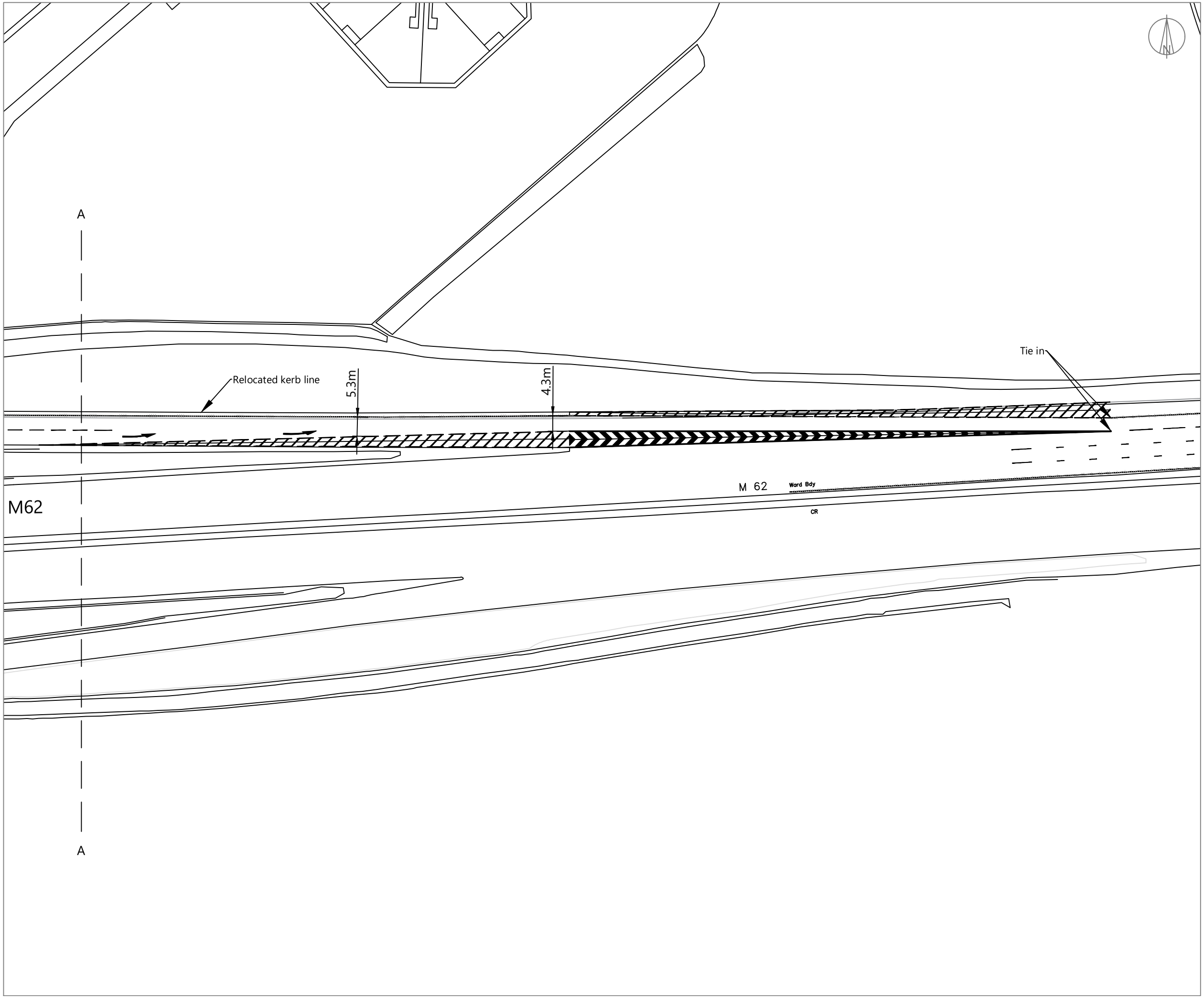
SHEET 2 OF 3

HighgateTransportation
www.highgatetransportation.co.uk
First Floor, 43-45 Park Street
Bristol BS8 1ES
07973 375 937 / 07595 892 217

TITLE:

M62 J9 POTENTIAL E/BOUND ON-SLIP IMPROVEMENTS - WESTERN SECTION

DATE:	DRAWN BY:	CHECKED:
08/09/20	AH	FB



NOTES:

PRELIMINARY

Note: Lane markings and arrows revised where necessary

ISSUE	REASON FOR REVISION	DATE

PROJECT:

PEEL HALL, WARRINGTON

CLIENT:

SATNAM MILLENNIUM LTD

PROJECT REFERENCE:	DRAWING NUMBER:	SCALE:
1901	28	1:1,000 @ A3

SHEET:

SHEET 3 OF 3

HighgateTransportation

www.highgatetransportation.co.uk

First Floor, 43-45 Park Street
Bristol BS8 1ES
07973 375 937 / 07595 892 217

TITLE:

M62 J9 POTENTIAL E/BOUND ON-SLIP IMPROVEMENTS - EASTERN SECTION

DATE:	DRAWN BY:	CHECKED:
08/09/20	AH	FB

NOTES:

North arrow indicative.

PRELIMINARY

ISSUE	REASON FOR REVISION	DATE
-	-	-

PROJECT:
PEEL HALL
WARRINGTON

CLIENT:
SATNAM MILLENNIUM LTD

PROJECT REFERENCE:	DRAWING NUMBER:	SCALE:
1901	08	1:500 @ A3

HighgateTransportation
www.highgatetransportation.co.uk
First Floor, 43-45 Park Street
Bristol BS1 5NL
07973 375 937 / 07595 892 217

TITLE:
PROPOSED A49 / GOLBOURNE ROAD
JUNCTION IMPROVEMENTS

DATE:	DRAWN BY:	CHECKED:
04/03/20	BGS	FB

Appendix DT/V6

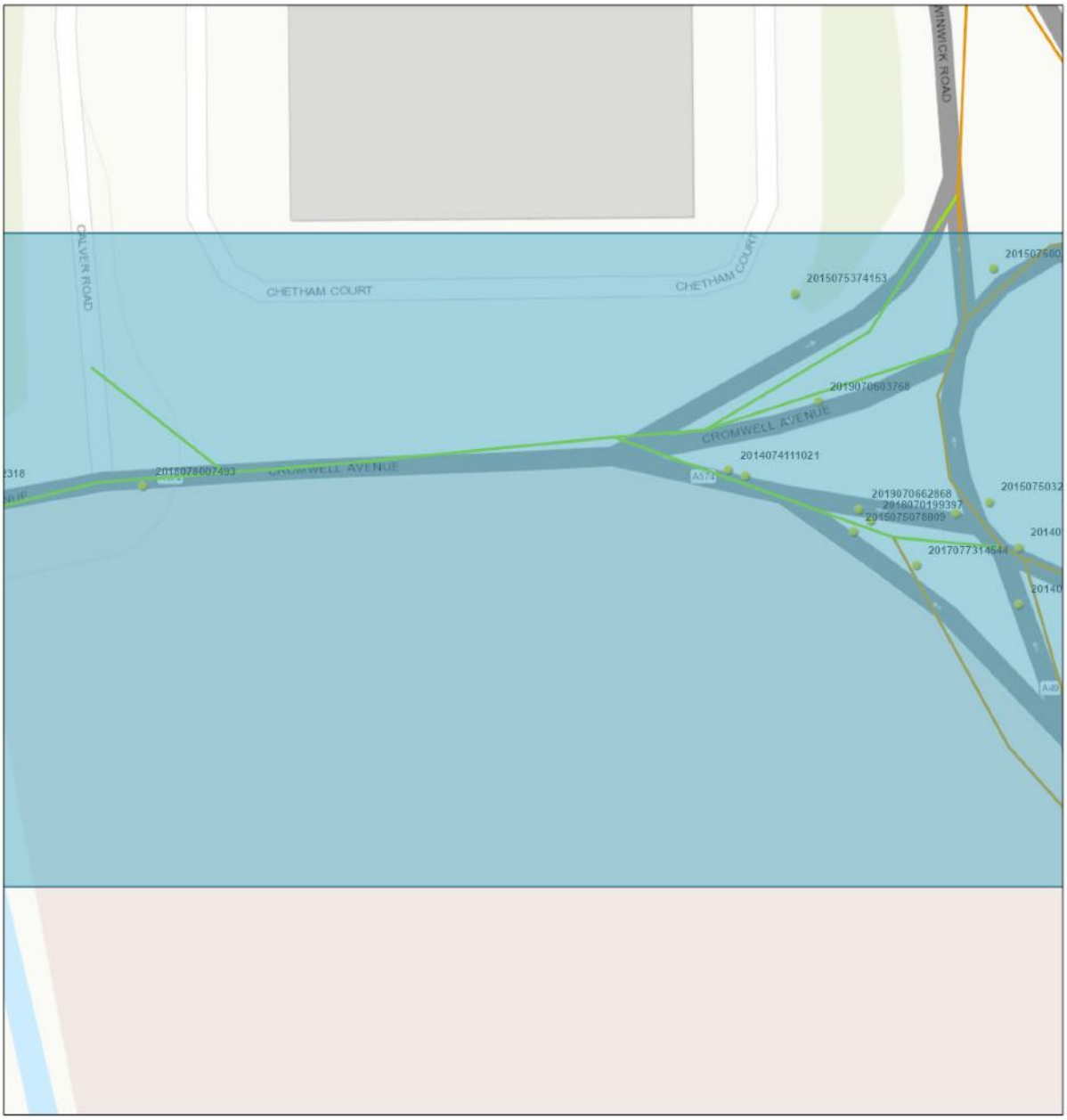
Accident Data - Cromwell Avenue

Screening Report

Area of Interest (AOI) Information

Area : 23,327.95 m²

Jan 18 2021 8:57:07 GMT



Summary

Name	Count	Area(m²)	Length(m)
Crashes	14	N/A	N/A

Crashes

#	Carriageway Hazards	Severity	Officer Attended	Date and Time	Year
1	None	Slight	No officer attended crash scene	7/1/2018, 12:50 pm	2018
2	None	Slight	No officer attended crash scene	3/6/2014, 6:25 pm	2014
3	None	Slight	Police officer attended crash scene	18/10/2019, 12:55 am	2019
4	None	Slight	Police officer attended crash scene	3/7/2018, 11:48 am	2018
5	None	Slight	No officer attended crash scene	28/7/2014, 6:25 pm	2014
6	None	Slight	Police officer attended crash scene	4/2/2015, 4:20 pm	2015
7	None	Slight	Police officer attended crash scene	2/1/2015, 10:56 am	2015
8	None	Slight	No officer attended crash scene	27/8/2015, 5:15 pm	2015
9	None	Slight	Police officer attended crash scene	21/4/2014, 11:00 am	2014
10	None	Slight	No officer attended crash scene	13/11/2019, 7:20 am	2019
11	None	Slight	Police officer attended crash scene	21/3/2015, 1:15 pm	2015
12	None	Slight	Police officer attended crash scene	15/12/2015, 4:00 pm	2015
13	None	Slight	No officer attended crash scene	29/9/2017, 2:50 pm	2017
14	None	Slight	Police officer attended crash scene	11/6/2014, 10:03 am	2014

#	Number of Vehicles	Number of Casualties	Highway Authority	Road Number	Weather Conditions
1	2	2	Warrington	A574	Fine without high winds
2	2	1	Warrington	A574	Fine without high winds
3	2	1	Warrington	A574	Fine without high winds
4	2	2	Warrington	A49	Fine without high winds
5	2	1	Warrington	A49	Fine without high winds
6	2	1	Warrington	A49	Fine without high winds
7	1	2	Warrington	A49	Fine without high winds
8	2	1	Warrington	A49	Fine without high winds
9	2	1	Warrington	A574	Fine without high winds
10	2	1	Warrington	A49	Raining without high winds
11	2	1	Warrington	A49	Fine without high winds
12	2	1	Warrington	U0	Raining without high winds
13	2	2	Warrington	A49	Fine without high winds
14	1	1	Warrington	A574	Fine without high winds

#	Road Type	Road Surface	Speed Limit	Light Conditions	Junction Detail
1	Single carriageway	Dry	30	Daylight: regardless of presence of streetlights	T or staggered junction
2	Roundabout	Dry	30	Daylight: regardless of presence of streetlights	Roundabout
3	Roundabout	Wet or Damp	30	Darkness: street lights present and lit	Roundabout
4	Single carriageway	Dry	30	Daylight: regardless of presence of streetlights	Roundabout
5	Dual carriageway	Dry	40	Daylight: regardless of presence of streetlights	Roundabout
6	Roundabout	Dry	40	Daylight: regardless of presence of streetlights	Roundabout
7	Roundabout	Dry	40	Daylight: regardless of presence of streetlights	Roundabout
8	Roundabout	Dry	30	Daylight: regardless of presence of streetlights	Roundabout
9	Single carriageway	Dry	30	Daylight: regardless of presence of streetlights	T or staggered junction
10	Slip Road	Wet or Damp	30	Daylight: regardless of presence of streetlights	Slip road
11	Roundabout	Dry	40	Daylight: regardless of presence of streetlights	Roundabout
12	Unknown	Wet or Damp	20	Darkness: street lights present but unlit	Not at or within 20 metres of junction
13	Roundabout	Wet or Damp	30	Daylight: regardless of presence of streetlights	Roundabout
14	Roundabout	Dry	40	Daylight: regardless of presence of streetlights	Roundabout

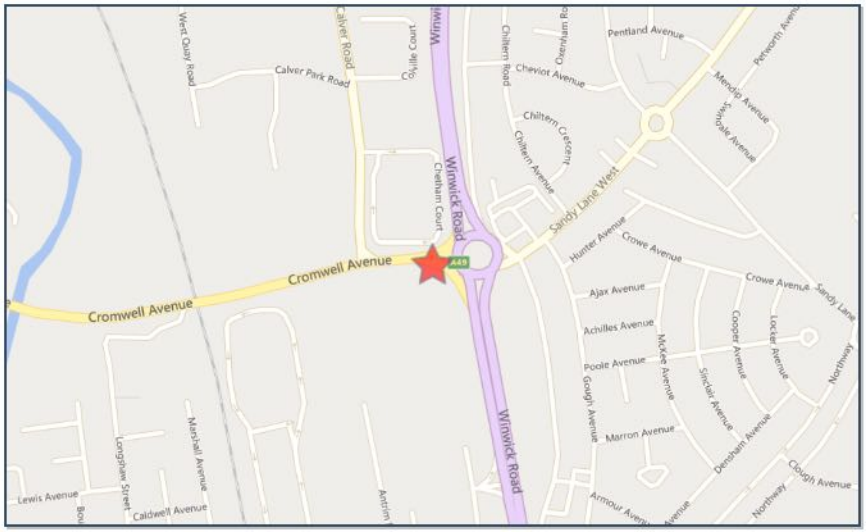
#	Pedestrian Crossing	Local Authority District	Junction Control	Provisional Data	Web Link	Count
1	No physical crossing facility within 50 metres	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2018078007493	1
2	Pedestrian phase at traffic signal junction	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2014074160962	1
3	Pelican, puffin, toucan or similar non-junction pedestrian light crossing	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2019070603768	1
4	Pelican, puffin, toucan or similar non-junction pedestrian light crossing	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2018070199397	1
5	Pedestrian phase at traffic signal junction	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2014074221117	1
6	Pelican, puffin, toucan or similar non-junction pedestrian light crossing	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2015075032863	1
7	Pedestrian phase at traffic signal junction	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2015075001380	1
8	No physical crossing facility within 50 metres	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2015075254408	1
9	Pedestrian phase at traffic signal junction	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2014074111021	1
10	No physical crossing facility within 50 metres	Warrington Borough	Give way or uncontrolled	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2019070662868	1
11	Pedestrian phase at traffic signal junction	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2015075078809	1
12	No physical crossing facility within 50 metres	Warrington Borough	Not Applicable	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2015075374153	1
13	Pedestrian phase at traffic signal junction	Warrington Borough	Give way or uncontrolled	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2017077314544	1
14	Pedestrian phase at traffic signal junction	Warrington Borough	Auto traffic signal	No	https://www.crashmap.co.uk/reports/proreportservice?reportId=2014074166076	1

crashmap.co.uk

No

Crash Date:	Monday, April 21, 2014	**Time of Crash:**	10:00:00 AM	**Crash Reference:**	**2014074111021**

Highest Injury Severity:	Slight	**Road Number:**	A574	**Number of Casualties:**	1
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360292 390981
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	T or staggered junction				
Junction Pedestrian Crossing:	Pedestrian phase at traffic signal junction				
Road Type:	Single carriageway				
Junction Control:	Auto traffic signal				



For more information about the data please visit: *www.crashmap.co.uk/home/Faq*
To subscribe to unlimited reports using CrashMap Pro visit *www.crashmap.co.uk/Home/Premium_Services*

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No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Pedal cycle	-1	Male	21 - 25	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
2	Car (excluding private hire)	-1	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	21 - 25	Unknown or other	Unknown or other

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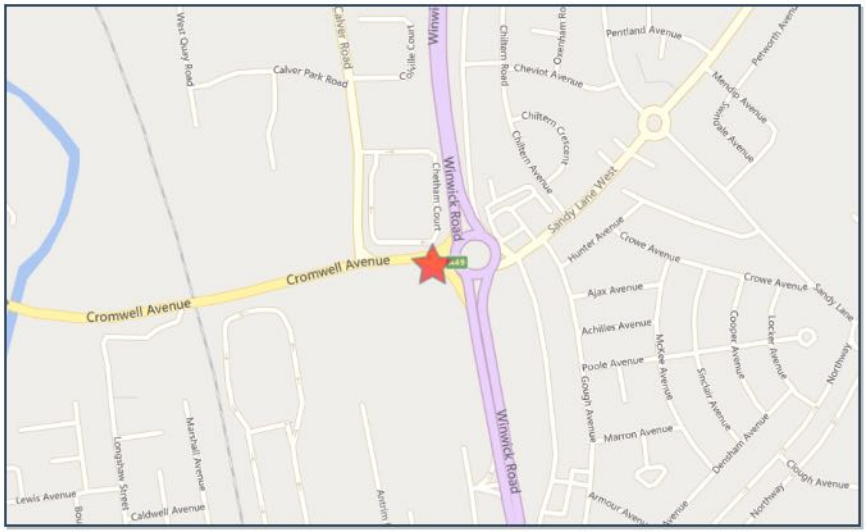
No

Crash Date:	Tuesday, June 03, 2014	**Time of Crash:**	5:25:00 PM	**Crash Reference:**	**2014074160962**

Highest Injury Severity:	Slight	**Road Number:**	A574	**Number of Casualties:**	1
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360295 390980
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	Pedestrian phase at traffic signal junction				
Road Type:	Roundabout				
Junction Control:	Auto traffic signal				



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To subscribe to unlimited reports using CrashMap Pro visit *www.crashmap.co.uk/Home/Premium_Services*

No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	3	Female	26 - 35	Vehicle is slowing down or stopping	Front	Other	None	None
2	Pedal cycle	-1	Male	6 - 10	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	6 - 10	Unknown or other	Unknown or other

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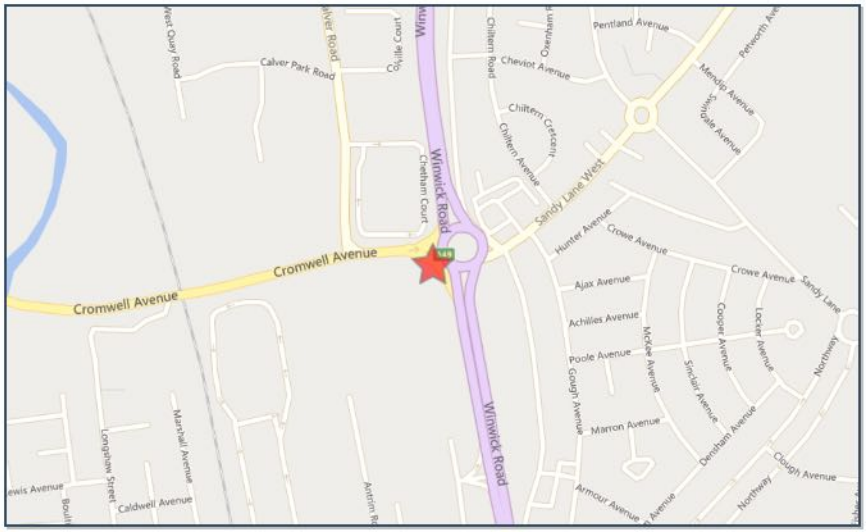
No

Crash Date:	Saturday, March 21, 2015	**Time of Crash:**	1:15:00 PM	**Crash Reference:**	**2015075078809**

Highest Injury Severity:	Slight	**Road Number:**	A49	**Number of Casualties:**	1
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360314 390970
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	40				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	Pedestrian phase at traffic signal junction				
Road Type:	Roundabout				
Junction Control:	Auto traffic signal				



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No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	3	Male	36 - 45	Vehicle is moving off	Back	Other	None	None
2	Car (excluding private hire)	-1	Male	36 - 45	Vehicle is moving off	Front	Other	None	None

Casualties

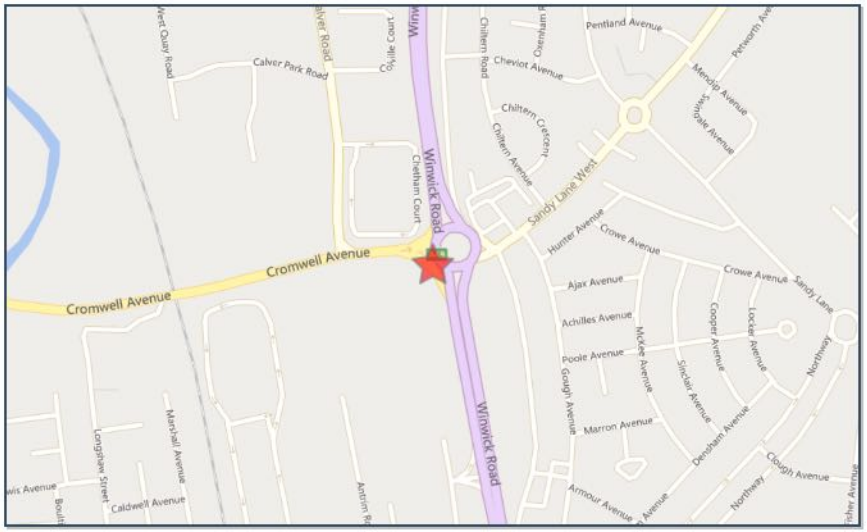
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

crashmap.co.uk

No

Crash Date:	Friday, September 29, 2017	**Time of Crash:**	1:50:00 PM	**Crash Reference:**	**2017077314544**

Highest Injury Severity:	Slight	**Road Number:**	A49	**Number of Casualties:**	2
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360325 390964
Weather Description:	Fine without high winds				
Road Surface Description:	Wet or Damp				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	Pedestrian phase at traffic signal junction				
Road Type:	Roundabout				
Junction Control:	Give way or uncontrolled				



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To subscribe to unlimited reports using CrashMap Pro visit *www.crashmap.co.uk/Home/Premium_Services*

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No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	14	Male	Unknown	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
2	Car (excluding private hire)	7	Male	26 - 35	Vehicle is waiting to proceed normally but is held up	Back	Other	None	None

Casualties

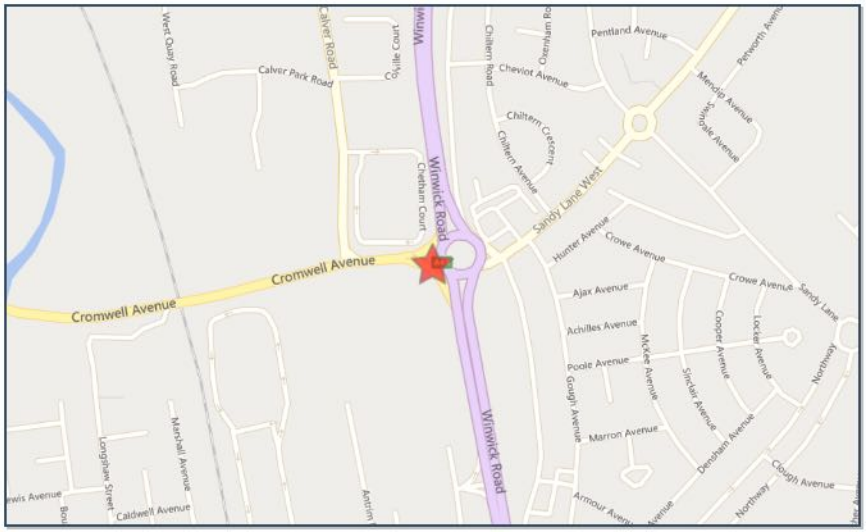
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	26 - 35	Unknown or other	Unknown or other
2	2	Slight	Vehicle or pillion passenger	Female	26 - 35	Unknown or other	Unknown or other

crashmap.co.uk

No

Crash Date:	Tuesday, July 03, 2018	**Time of Crash:**	10:48:00 AM	**Crash Reference:**	**2018070199397**

Highest Injury Severity:	Slight	**Road Number:**	A49	**Number of Casualties:**	2
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360317 390972
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	Pelican, puffin, toucan or similar non-junction pedestrian light crossing				
Road Type:	Single carriageway				
Junction Control:	Auto traffic signal				



For more information about the data please visit: *www.crashmap.co.uk/home/Faq*
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powered by agilysis

No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	12	Female	26 - 35	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
2	Car (excluding private hire)	7	Male	66 - 75	Vehicle is waiting to proceed normally but is held up	Back	Other	None	None

Casualties

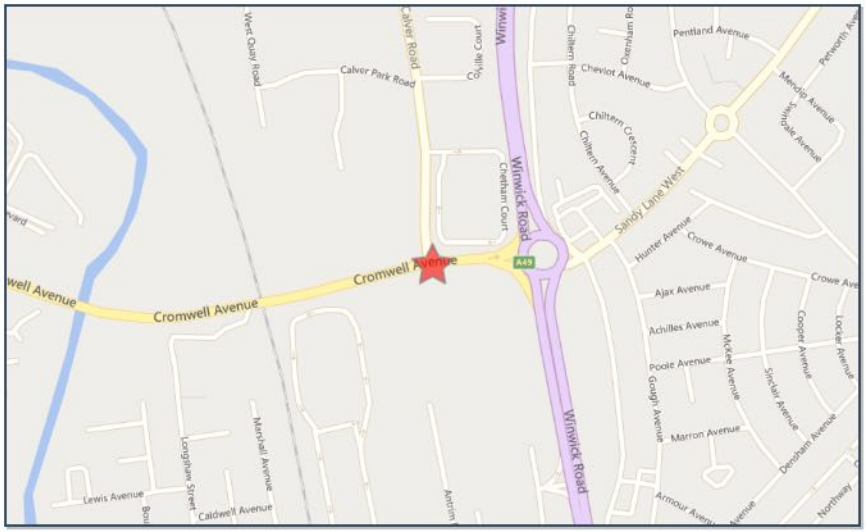
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	66 - 75	Unknown or other	Unknown or other
2	2	Slight	Vehicle or pillion passenger	Female	56 - 65	Unknown or other	Unknown or other

crashmap.co.uk

No

Crash Date:	Sunday, January 07, 2018	**Time of Crash:**	12:50:00 PM	**Crash Reference:**	**2018078007493**

Highest Injury Severity:	Slight	**Road Number:**	A574	**Number of Casualties:**	2
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360189 390979
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	T or staggered junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Auto traffic signal				



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No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	15	Male	21 - 25	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
2	Car (excluding private hire)	13	Male	46 - 55	Vehicle is slowing down or stopping	Back	Other	None	None

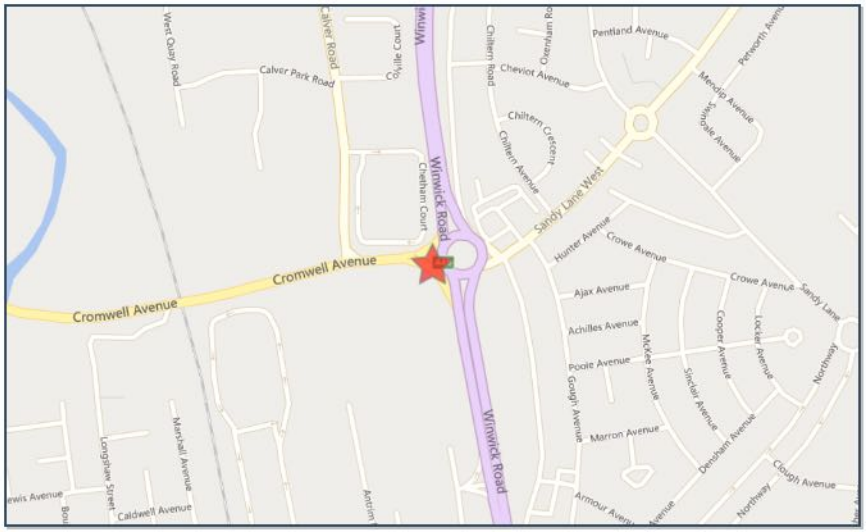
Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Vehicle or pillion passenger	Female	36 - 45	Unknown or other	Unknown or other
2	2	Slight	Vehicle or pillion passenger	Female	16 - 20	Unknown or other	Unknown or other

crashmap.co.uk

No

Crash Date:	Wednesday, November 13, 2019	**Time of Crash:**	7:20:00 AM	**Crash Reference:**	**2019070662868**
Highest Injury Severity:	Slight	**Road Number:**	A49	**Number of Casualties:**	1
Highway Authority:	Warrington			**Number of Vehicles:**	2
Local Authority:	Warrington Borough			**OS Grid Reference:**	360315 390974
Weather Description:	Raining without high winds				
Road Surface Description:	Wet or Damp				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Slip road				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Slip Road				
Junction Control:	Give way or uncontrolled				



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To subscribe to unlimited reports using CrashMap Pro visit *www.crashmap.co.uk/Home/Premium_Services*

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No

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Van or goods vehicle 3.5 tonnes mgw and under	13	Male	26 - 35	Vehicle is slowing down or stopping	Back	Other	None	None
2	Motorcycle over 500cc	2	Male	46 - 55	Vehicle is waiting to proceed normally but is held up	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	46 - 55	Unknown or other	Unknown or other

Appendix DT/V7

RSA Stage 1 and Designer's Response -

A49/Cromwell Avenue Mitigation

ROAD SAFETY CONSULTING LTD

Stage 1 Road Safety Audit

A49 / Cromwell Avenue, Warrington

Capacity Improvement Measures

Date: 29/01/2021

Report produced for: Satnam Millennium Ltd

Report requested by: Highgate Transportation Ltd

On behalf of: Warrington Borough Council

Report prepared by: Kevin Seymour, Road Safety Consulting Ltd

Reference: RSC/KS/EB/20044

Document Control Sheet

Project Title	A49 / Cromwell Avenue, Warrington Capacity Improvement Measures
Report Title	Stage 1 Road Safety Audit Reference: RSC/KS/EB/20044
Revision	-
Status	Final
Control Date	29/01/2021

Record of Issue

Issue	Author	Date	Check	Date	Authorised	Date
Final	**KS**	**28/01/21**	**EB**	**29/01/21**	**EB**	**29/01/21**

Distribution

Organisation	Contact	Copies
Highgate Transportation Ltd	Fiona Bennett	ecopy
Warrington Borough Council		

Road Safety Consulting Ltd
4 Paramore Close
Whetstone
Leicestershire
LE8 6EY
Registered in England and Wales
Company Number 5225549

1. Introduction

1.1. This report results from a Stage 1 Road Safety Audit carried out on the proposed Capacity Improvement Measures associated with the signalised roundabout junction of the A49 / Cromwell Avenue, Warrington. The Audit was carried out during January 2021.

1.2. This Road Safety Audit was produced for (client organisation): Satnam Millennium Ltd, requested by (design organisation): Highgate Transportation Ltd, on behalf of (overseeing organisation): Warrington Borough Council.

1.3. The Road Safety Audit Brief was provided by Fiona Bennett of Highgate Transportation Ltd. The audit team was approved by Fiona Bennett of Highgate Transportation Ltd. The audit team considers that the audit brief is sufficient to carry out this Stage 1 Road Safety Audit.

1.4. The Audit Team membership was as follows:

Audit Team Leader
Kevin Seymour
B Sc, PG Dip TS, MCIHT, MSoRSA
Highways England Certificate of Competence (Road Safety Audit)
Road Safety Consulting Ltd

Audit Team Member
Elaine Bingham
B Eng (Hons), MCIHT, MSoRSA
Highways England Certificate of Competence (Road Safety Audit)
Road Safety Consulting Ltd

1.5. The audit took place at the offices of Road Safety Consulting Ltd between 25th and 29th January 2021. The audit was undertaken in accordance with the audit brief and the report has been prepared with reference to the Design Manual for Roads and Bridges (DMRB) GG 119.

1.6. The Audit Team visited the site together on the 25th January 2021 between 1:00pm and 2:00pm periods. Weather conditions at the time of the audit was cloudy and dry. The road surface was damp. Traffic flows were low. A number of pedestrians and cyclists were observed during the site visit.

1.7. Low traffic volumes may, in part, be due to the coronavirus lockdown, however, the Audit Team was satisfied that the road safety audit would not be compromised by the lockdown travel restrictions.

1.8. The audit comprised an examination of the information provided by the Design Organisation and listed in Appendix 1.

1.9. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.10. All comments and recommendations are referenced to the design drawing and the locations have been indicated on plans in Appendix 2.

2. Items Considered

2.1. Scheme Proposals

2.1.1. The development proposals are associated with a new residential neighbourhood on land at Peel Hall, Warrington.

2.1.2. The highway improvement scheme work consists of:

- The lengthening and widening of the A49 northbound left-turn lane to A574 Cromwell Avenue and associated works including the relocation of a bus stop and offset of pedestrian footway.
- There will be a requirement to also repaint lane destination road markings on the southern circulatory of the A49 roundabout to ensure lane discipline.

2.2. Information Provided to the Audit Team

2.2.1. Information that has been provided to the Audit Team, for the purpose of this audit, is as outlined within the Road Safety Audit Brief and Appendix 1 of this report.

2.2.2. It is understood that no previous Road Safety Audits have been carried out on these proposals.

2.3. Departures from Standards (Design)

2.3.1. The Audit Team has not been advised of any design departures from standards.

2.4. Departures from Standards (Road Safety Audit)

2.4.1. This Road Safety Audit has been produced, with reference to DMRB – GG 119 – Road Safety Audit with the following exception.

- It is unclear whether the Road Safety Audit brief provided has been approved Warrington Borough Council, however the Audit Team did not consider that the lack of a formally approved brief would compromise the production of a Road Safety Audit for these proposals.

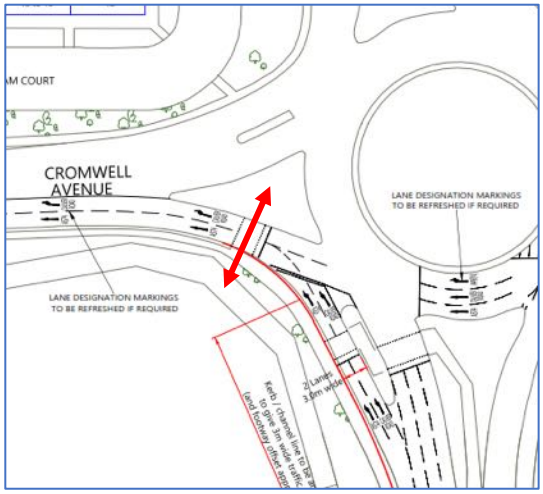
3. Items Raised by this Stage 1 Road Safety Audit

3.1. Walking, Cycling & Horse Riding

3.1.1. Problem

Location: At the Cromwell Avenue signalled crossing

Summary: Failure to stop type collisions involving pedestrian injury



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

Recommendation:

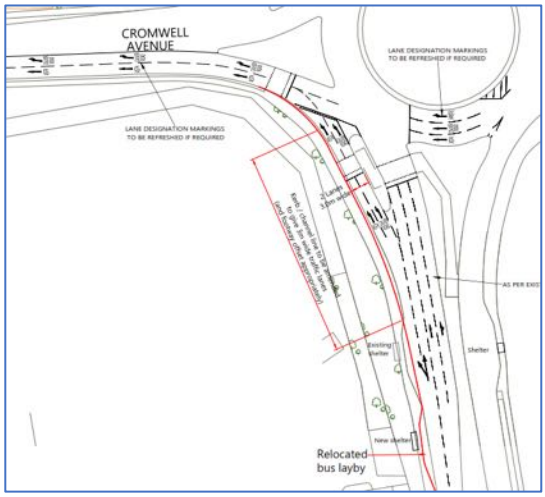
It is recommended that the left slip lane is fully signalled, removing the left slip lane give way facility, incorporating the signal crossing into the junction control strategy, to remove the potential for failure to stop type collisions at the crossing.

3.2. Junctions

3.2.1. Problem

Location: At the left slip lane

Summary: Lane change collisions on Cromwell Avenue



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

Recommendation:

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

End of Safety Comments

4. Audit Team Statement

We certify that this Stage 1 Road Safety Audit has been carried with reference to GG 119.

Audit Team Leader

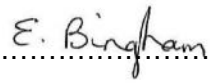
Kevin Seymour
B Sc, PG Dip TS, MCIHT, MSoRSA
Highways England Certificate of Competence (Road Safety Audit)

Signed:  Dated 28th January 2021.

Director of Road Safety Consulting Ltd

Audit Team Member

Elaine Bingham,
B Eng (Hons), MCIHT, MSoRSA
Highways England Certificate of Competence (Road Safety Audit)
Director of Road Safety Consulting Ltd

Signed:  Dated 29th January 2021.

Director of Road Safety Consulting Ltd

Road Safety Consulting Ltd
4 Paramore Close
Whetstone
Leicestershire
LE8 6EY

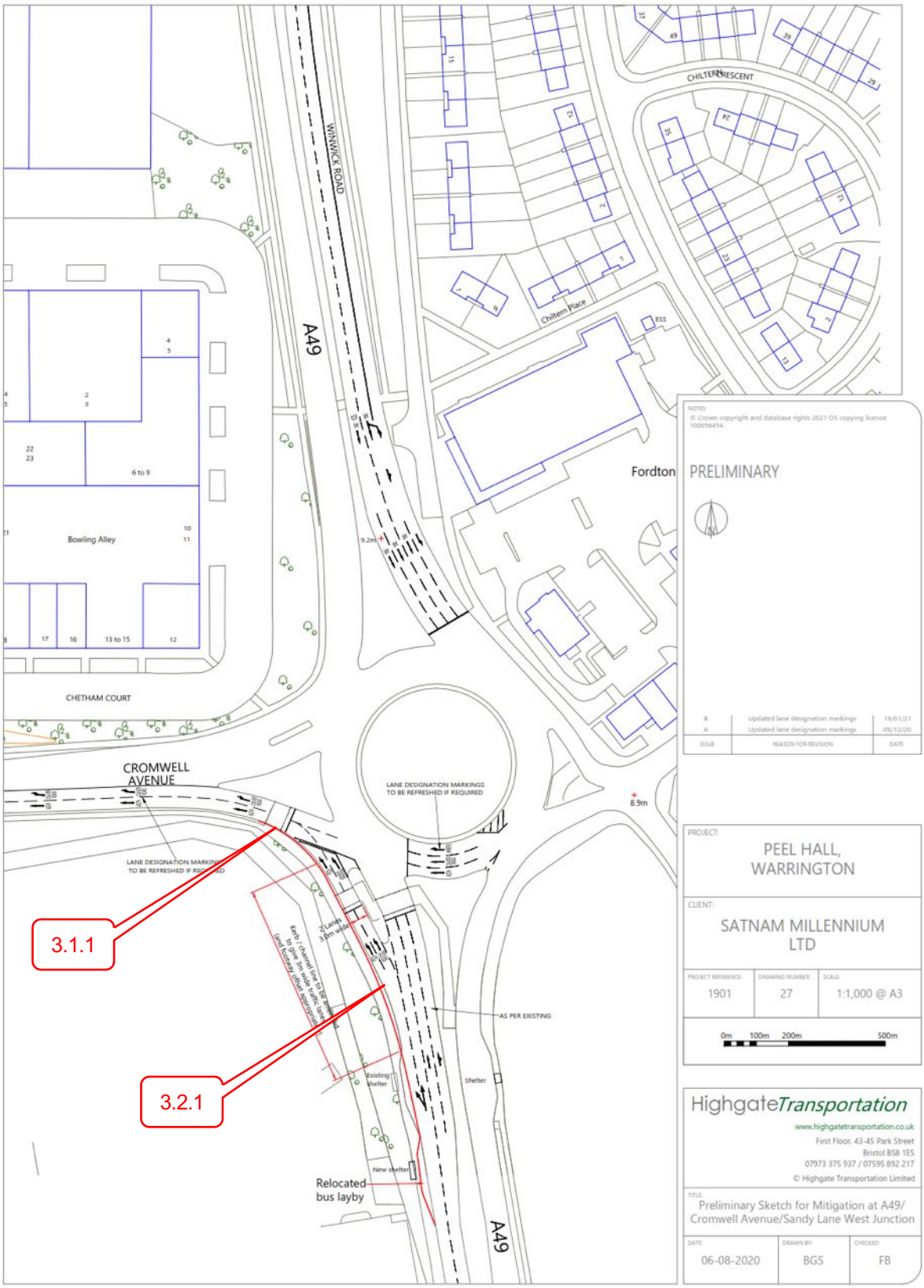
APPENDIX 1: Information Provided

List of Information Provided

Document Reference Number	Revision	Title
Drawing 1901/27/B	B	Preliminary sketch for Mitigation at A49/Cromwell Avenue/Sandy Lane West Junction
Drawing 1901/30		Existing situation at A49/Cromwell Avenue/Sandy Lane West Junction
Drawing 1901/TR03		Swept path analysis of proposed improvement works
Transport Assessment Addendum (March 2020)		-
WBC Accident Records		-
CrashMap report and accident details		-
WMMTM16 output flow diagrams for 2022 and 2032, Do Minimum and Do Something scenarios		-
2019 MCC data and queue lengths		-
VISSIM Base Model Report (October 2020)		-
VISSIM Future Years Modelling Report (November 2020)		--
Traffic signal staging for A49/Cromwell Avenue/Sandy Lane West Junction		-

APPENDIX 2: Drawing Showing Problem Locations

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



Project Details

Table F.1 Project details

Report title:	Designers response to Stage 1 Road Safety Audit, A49 / Cromwell Avenue Roundabout, Warrington
Date:	5th February 2021
Document reference and revision:	1901/RSA/DR/02
Prepared by:	Highgate Transportation Ltd
On behalf of:	Satnam Millennium Ltd

Table F.2 Authorisation sheet

Report title	Designers Response
Prepared by:	
Name:	Alice Howse
Position	Transport Planner
Signed:	
Organisation:	Highgate Transportation Ltd
Date	05/02/2021
Approved by:	
Name:	Fiona Bennett
Position	Director
Signed:	
Organisation:	Highgate Transportation Ltd
Date:	05/02/2021

Introduction

A Stage 1 Road Safety Audit (ref: RSC/KS/EB/20044) was undertaken by Road Safety Consulting Ltd on 29th January 2021 with regard to proposed capacity improvements at the A49/Cromwell Avenue roundabout, Warrington. The proposals include the lengthening and widening of the A49 northbound left turn lane to A574 Cromwell Avenue, including the relocation of a bus stop and offset of pedestrian footway.

The Road Safety Audit response has been prepared by Alice Howse, Highgate Transportation Ltd.

Key personnel

Table F.3 Key personnel

Overseeing Organisation:	Warrington Borough Council
RSA team:	Road Safety Consulting Ltd
Design organisation:	Highgate Transportation Ltd

Road safety audit decision log

Table F.4 Road safety audit decision log

RSA problem	RSA recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
3.1 Walking, Cycling & Horse Riding **3.1.1 Location** - At the Cromwell Avenue signalled crossing. **Summary** - Failure to stop type collisions involving pedestrian injury. The audit team noted that drivers emerging from the left slip lane occasionally ran a red light, when the pedestrian crossing was green for vulnerable users. This occurrence may be exacerbated when the left slip is two lanes wide and when larger vehicles may obscure signal heads and pedestrians waiting on the southern footway. Red light running may lead to pedestrian to vehicle collisions.	It is recommended that the left slip lane is fully signalled, removing the left slip lane give way facility, incorporating the signal crossing into the junction control strategy, to remove the potential for failure to stop type collisions at the crossing.	Agreed. At detailed design stage the give-way lining at the end of the left-turn lanes where they meet Cromwell Avenue will be removed. The stop line for the pedestrian crossing on the left-turn lanes will become the fully-signalled stop line within the junction control for left-turn traffic. The VISSIM modelling has allowed for such a signal control strategy. The signalised pedestrian crossing on Cromwell Avenue (westbound) will then be incorporated into the overall junction control strategy.		

RSA problem	RSA recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
3.2 Junctions 3.2.1 Location – At the left slip lane. Summary - Lane change collisions on Cromwell Avenue. The provision of a two lane left slip lane may increase the likelihood of lane changes on the Cromwell Avenue link between the junction and Calver Road. Lane changes may lead to side-swipe type collisions.	It is recommended that vertical lane destination signing is provided to clarify lane allocations at the left slip lane.	Agreed. This will be shown at detailed design.		

Items to be discussed with Local Highway Authority

Description	Recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
1. The existing dual use facility along Winwick Road, on the western side of the road, south of the junction appears to end arbitrarily. The facility will be affected by the relocation of the bus stop and layby and this should be accommodated within the detailed design. See photo 008 attached. See also Issue 2 below.	The termination of the dual use facility should be relocated, to reflect the location of the new bus stop and layby.	Agreed. This will be dealt with at detailed design stage.		

Photo 008

Items to be discussed with Local Highway Authority

Description	Recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
2. The audit team noted that there was a substantial desire for cyclists to use the off-road facilities, as well as pedestrian crossings at the junction, particularly across Cromwell Avenue and the southern arm of the junction. This use clearly reflects that cyclists are not keen to use the dual carriageway at this location.	As part of an overall cycle strategy the need and desirability to enhance off-road facilities should be discussed with the highway authority.	We will discuss at detailed design stage.		

Items to be discussed with Local Highway Authority

Description	Recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
3. At the Winwick Road crossing there is evidence of poor surface water drainage at the dropped kerb area and at the footway. This is an existing issue that should be resolved when amending the left slip lane area. See photo 326 attached.	The surface water drainage issue should be resolved as part of the detailed design.	This will be picked up at detailed design stage.		

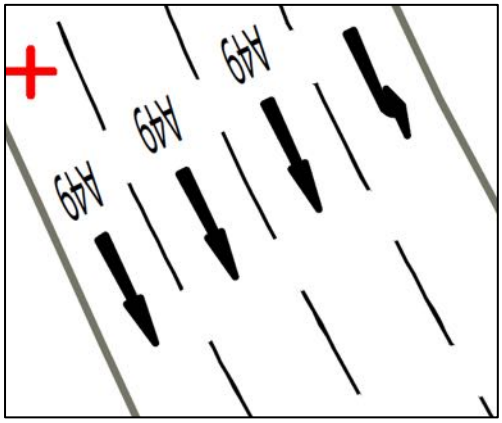
Photo 326

Items to be discussed with Local Highway Authority

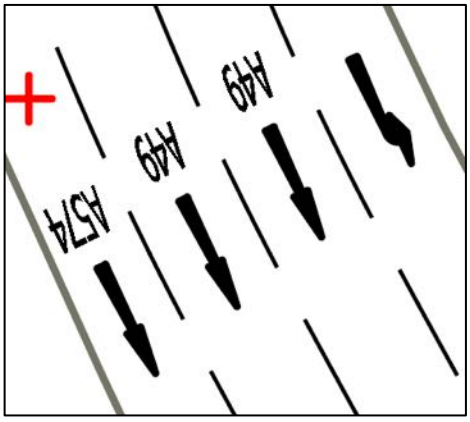
Description	Recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA action
4. On the northern approach arm of the junction, drawing 27 shows the offside lane as "A49". This is assumed to be a drafting error, as the existing marking shows "A574".	The lane allocation marking on the drawing should reflect the existing situation.	This was a drafting error and will be updated at detailed design stage.		

Google Earth screenshot of A49 northern approach road markings:

a) Existing drawing:



b) Changes required:



Design organisation and Overseeing Organisation statements

Table F.5 Design organisation statement

On behalf of the design organisation I certify that: 1) The RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation	
Name:	Fiona Bennett
Signed:	
Position:	Director
Organisation:	Highgate Transportation Ltd
Date:	

Table F.6 Overseeing Organisation statement

On behalf of the Overseeing Organisation I certify that: 1) The RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and 2) The agreed RSA actions will be progressed.	
Name:	
Signed:	
Position:	
Organisation:	Warrington Borough Council
Date:	

Appendix DT/V8

KPMG Report

The future of towns and cities post COVID-19

January 2021

kpmg.com/uk

How will COVID-19 transform England's town and city centres?

As new vaccines are gradually deployed across the UK this year, a post-COVID future is in sight, one where people can go back to their normal lives. That 'normal' will be different to what we were used to, however.

The pandemic has accelerated the adoption of online shopping, with consumers more likely to purchase household goods online than in a store. It has also made working from home acceptable and online gatherings rather than meeting in person the new norm, freeing endless hours of business travel and expense for better use. People are unlikely to return to the old ways of doing things.

With fewer people coming in to big cities and towns to work and shop, that leaves a big space in areas that were once characterised by bustling shops and offices. Those places that are most at risk are those that have little else to attract locals and visitors from further afield.

In this report we look at the impact of the pandemic on towns and cities in England. We also consider what needs to change, if they are to continue to be vibrant places to live, work and visit.

The pandemic has added a new dimension to the levelling-up agenda. While some of the more deprived areas may be less impacted by the pandemic directly, as they had a smaller proportion of office workers and retail space to start with in their centres, they will nevertheless need to rethink their path for growth in light of the changes brought about by it.

Towns and cities across the UK will need help and space to rethink the purpose of their centres. The high streets of the future will need to become multi-purpose locations, combining retail and hospitality amenities with residential, education, healthcare, cultural, technology, community and more. Office space will need to be transformed for three main purposes: collaboration, creativity and culture, with less space devoted to tasks that could be done remotely. Transport links will need to be reconsidered, as well as additional infrastructure needs. The pandemic has made it essential for places to galvanise their centres for the new way of living.

Yael Selfin
Chief Economist, KPMG in the UK

The loss of commuter footfall

The big revelation of the pandemic has been how effectively many people can work from home. As the virus struck, businesses proved agile at transferring activity to workers' homes, taking advantage of new telecommunication platforms.

Not all was smooth sailing, but the adoption of a new mode of working resulted in some gains for both companies and workers:

— forfeiting most **business travel** allowed companies to save costs and gave workers more time to focus on their core tasks, potentially making them more productive. Virtual meetings also enabled broader access to top experts; Team A was almost always available anywhere in the world at short notice (and at much less expense when travel costs and time were avoided)

— suspending the **daily commute** enabled workers to save time and money, allowing many to work more flexibly. (One of the downsides of this is a blurring between work and home life.)

There is a debate how permanent these changes will prove once the virus is no longer a threat and people can return to normal socialising.

The deep recession triggered by the pandemic has squeezed profit margins across a swath of businesses; many CFOs are delighted at the opportunity to cut costs by downsizing on expensive property commitments. Some businesses, including our own, have already gone down the route of transforming their offices into collaboration hubs where many workers will come to meet rather than sit at a desk and perform tasks individually. Surveys show that most workers would prefer to return to a hybrid mode of work combining days with clients and colleagues in the office and days at home.

"Almost all companies will maintain physical space, but it will be there for three main purposes: collaboration, creativity and culture, and there will be less space devoted to standard desk space for tasks that could be done remotely."

Andy Pyle, Head of Real Estate, KPMG in the UK

Post-COVID we are unlikely to see a return to old commuting habits, with a significant proportion of those able to work from home doing so for at least part of the week. At the same time, the collapse in high street retail – which we discuss further below – will serve to exacerbate the vacuum in city and town centres, with less people calling in to shop. The implications of these twin blows could be significant.

Businesses support services – from taxis to gardening to security services – will see reduced demand as businesses cut back on office space or exit some cities altogether, with a likely fall in the number of support businesses as a result. At the same time, the fall in commuter footfall will hit personal services such as hairdressers, and other businesses such as those offering food to go for lunchtime office crowds as well as shoppers venturing to the high street.

It's likely we'll see an adjustment in the price of commercial property to reflect this new reality. Ramifications could be far-reaching: from corporate pension funds and insurers' solvency, to SMEs' ability to offer loan collateral. A considerable correction in commercial real estate prices could also prove significant for some banks at a time when bad loans are likely to be on the rise.

The fall in commuter numbers is not expected to be uniform across England, with some towns and cities potentially more exposed than others. According to our analysis, the loss of commuter flow could range from over a tenth to under a third of commuter footfall pre-COVID, with Hemel Hempstead and Bracknell set to see up to 27.4% of office work performed from home.

1 We used 2019 data from the Business Register and Employment Survey (BRES), which breaks down employment into 729 different categories. For each category we assigned the proportion of work that can be done remotely based on analysis in Dingel, Jonathan I., and Brent Neiman 'How many jobs can be done at home?' No. w26948. National Bureau of Economic Research, 2020. In addition, we estimated for those categories that can work from home which would opt for a blended model (working two days at home on average) and which will be home-based only. Using the structure of each city and town's employment level and the assumption of how much each employment category would be done from home, we estimated the total change in commuter flow in each town and city. The boundaries for cities and towns use the ONS 2015 definition of built-up area with a population of over 75,000. This map outlines their geographical boundaries:

https://ons.maps.arcgis.com/apps/MapJournal/index.html?appid=fb85539cdc4d4b7d9d34f9560092bb95

Table 1: Percentage of jobs expected to continue being done from home post-COVID

Town/city (worst affected to least)	% of jobs	Town/city (worst affected to least)	% of jobs	Town/city (worst affected to least)	% of jobs
Hemel Hempstead	27.4	Telford	17.3	Wigan	15.0
Bracknell	27.4	Bolton	17.3	Stockton-on-Tees	15.0
Warrington	21.6	Guildford	17.2	Southampton	14.9
Watford	21.3	Walsall	17.2	Stoke-on-Trent	14.9
Basingstoke	21.1	Mansfield	17.2	Southport	14.9
Milton Keynes	21.1	Darlington	17.1	Lincoln	14.8
Swindon	20.9	Colchester	17.0	Southend-on-Sea	14.8
Reading	20.9	Cheltenham	16.8	Wakefield	14.8
Peterborough	20.8	Bury	16.8	Sunderland	14.8
Slough	20.5	Bedford	16.7	Wolverhampton	14.7
London	20.1	Nuneaton	16.6	Chatham	14.6
Salford	19.9	Harlow	16.5	Huddersfield	14.5
Northampton	19.9	Cambridge	16.4	Solihull	14.5
Stockport	19.7	Harrogate	16.4	Derby	14.5
Manchester	19.6	Poole	16.4	Oldham	14.4
Basildon	19.6	Gloucester	16.3	West Bromwich	14.3
St Albans	19.6	Maidstone	16.3	Eastbourne	14.3
Bristol	18.8	Gateshead	16.3	Blackpool	14.3
Burton upon Trent	18.6	Birmingham	16.0	Kingston upon Hull	14.1
Norwich	18.5	Exeter	16.0	Doncaster	14.0
Newcastle-under-Lyme	18.4	Carlisle	15.9	Sutton Coldfield	14.0
Crawley	18.2	Halifax	15.9	York	13.9
Leeds	18.1	St Helens	15.9	Middlesbrough	13.9
Chester	18.1	Rochdale	15.9	Burnley	13.8
High Wycombe	18.0	Shrewsbury	15.9	Grimsby	13.6
Ipswich	18.0	Bath	15.9	Barnsley	13.5
Preston	17.9	Blackburn	15.8	Rotherham	13.4
Nottingham	17.9	Liverpool	15.6	Worthing	13.2
Chesterfield	17.9	Sheffield	15.5	Dudley	13.1
Woking	17.8	Newcastle upon Tyne	15.5	Gillingham	12.6
Luton	17.8	Bradford	15.3	Weston-Super-Mare	12.6
Birkenhead	17.8	Chelmsford	15.3	Hartlepool	12.5
Brighton and Hove	17.7	Portsmouth	15.2	Hastings	12.5
Redditch	17.5	Worcester	15.2	Plymouth	12.4
Bournemouth	17.4	Stevenage	15.2	Scunthorpe	12.3
Coventry	17.3	Leicester	15.1	South Shields	12.0
				Oxford	11.0

Source: Business Register and Employment Survey via Nomis, KPMG analysis.

A new purpose for local centres

The pandemic is having a mixed impact on property values according to Andy Pyle, Head of Real Estate, KPMG in the UK:

'The initial impact will be on rents, as supply exceeds demand causing rents to fall. That will then lead to falling valuations. But the falls are not going to be even across all property asset classes. Retail & Hospitality property is going to see the biggest fall, although this only applies to non-food retail – the grocers have all paid their rent in full and are trading very well. Supermarket property is a very hot part of the market right now. Warehouses similarly remain very hot, with values rising, so are healthcare assets e.g. GP surgeries. Office valuations and rents have not yet shifted much. This is going to come but hasn't been seen to date.

The fall in value for retail property is already happening. December 2020 retail property valuations could be somewhere around 50% of the previous peak, and in some cases much lower, with 2021 bringing further reductions in non-food retail property valuations, as the CVA/insolvencies and restructuring complete.

In addition, we are going to see a transformation in how occupiers pay for retail/hospitality space, moving away from long-term institutional leases, with upwards only rent reviews, towards turnover-based arrangements that see the operational risk shared between retailer and asset owner. Retailers are pushing for new leases tend to have features such as a percentage of turnover cap on total cost of occupation (including service charge); and a COVID-clause, where rents automatically abate in a lockdown situation. In some cases landlords are agreeing to this. There is also more focus on 'white box' type space, which retailers can trade out of with much lower capex requirements.'[2]

The reduction in commuter footfall and the consequent fall in commercial property values could open up opportunities to reshape town and city centres. By attracting new tenants for prime commercial property that will now find the rent affordable, town and city centres may be able to serve their inhabitants differently.

For example, new tenants could include universities expanding their remit to help support workers who lost their jobs during the crisis. Universities could help these workers acquire new skills and move to sectors with growing demand, such as the green economy, health and technology. They are also well placed to support local businesses, by helping them increase productivity with advice on ways to improve working practices and better integrate new technology. Other new tenants could include incubators sponsored by private business. These spaces for start-ups could be based in surplus office space or in standalone vibrant central locations. Businesses could offer these early-stage companies mentoring and subsidised office space.[3]

The local community could be further served with a variety of new community centres, catering for a full range of ages and interests, from children's recreation to adult art courses. Residential property is also going to be a key part of the mix.

It is particularly important that the new town and city centres have a clear purpose, which needs to include job creation, to try to address the reduction in commuter and shopper footfall.

2 See KPMG's Real Estate in the New Reality for more on our thinking in this area: https://home.kpmg/xx/en/home/insights/2020/08/real-estate-in-the-new-reality.html

3 Cambridge is one of the cities that are already some way down this journey, with for example stjohns.co.uk and cic.vc/about-us/cic .

High streets without retail

Unlike the shift to home working, COVID has accelerated a trend to online retail that was already in train. The pandemic increased businesses' share of online sales by existing customers and expanded its reach among new consumers. These consumers had no choice but to shop online in times of lockdown and tier restrictions. Even when all shops were open, a diminished customer experience due to social distancing, and the fear of being exposed to the virus, deterred many customers from venturing out to the high street.

Paul Martin, Head of Retail, KPMG in the UK outlines the latest trends in more detail:

'Online sales have grown by 50%+ in nine months, accelerating a trend that would have taken five years plus to deliver in normal circumstances. For obvious reasons non-essential retail has seen some of the biggest increases, as this was the only route to market over many weeks. It is important to bear in mind though that this growth will slow once stores are opened again and physical shopping is deemed to be safe.

We expect that 40-50% of all non-essential retailing will be transacted online going forward, up from around 30% pre-COVID. This is just a continuation of a trend we have seen over the last 10 years and many of the ailing players, especially those with underdeveloped online offerings in this space were already in a precarious situation pre-COVID. That means 50-60% of transactions will be conducted in stores, which represents a reduction of the 65% penetration we saw in non-food online during the first lockdown.

Alongside online, convenience stores have been key beneficiaries of the COVID pandemic although standalone 'big box' locations have also benefitted. This has slowed the decline in these formats that we have experienced for the last 10 years, although this is likely to change again once vaccination has been rolled out.

The big structural change in online is within the food channel: pre-COVID penetration was at 6.5%. It now stands at approximately 15%, with further growth to 20-25% possible and these penetration levels are here to stay. As grocery represents 50% of the overall UK retail market and we have we have tens of thousands of grocery stores in the UK grocery stores in the UK this will lead to major implications. Locations will need to be downsized, re-purposed into micro-fulfilment hubs or completely different usages.'

Post-COVID, we expect consumers will continue to embrace their new shopping habits in product categories where they can get better pricing and variety online. These could range from books, toys and games to household electrical appliances. Other categories such mobile phones and furniture may have a hybrid model with outlets serving more as showrooms for customers to try out products and then buy online. Nevertheless, some specialised local stores may retain their trade in store.[4]

The impact of consumers changing habits will differ, depending on the concentration of retail in individual towns and cities and the existing retail offering. According to our analysis[5], high streets could lose between 20-40% of their retail offerings as a result of the accelerated shift to online commerce. The impact on local employment would also vary depending on overall employment opportunities in each area. It could affect between 1-5% of the local labour force.

"The reduction of retail space will not be uniform. Many urban centres will be worse affected as there is a significant trend to suburban and rural locations, covering retail parks as well as high streets."

Paul Martin, Head of Retail, KPMG in the UK

4 We looked at 44 different retail categories and assigned a proportion of their trade that is likely to remain online once all social distancing restrictions are lifted.

5 We used 2019 employment data from ONS for each area and each retail category to arrive at the proportion of jobs that may be lost. We used that proportion to estimate the share of high street jobs in each location that are at risk.

Table 2: The impact of accelerated online adoption on local high streets

Ranking (worst affected to least)	Jobs lost	% of total retail	% of total employment	Ranking (worst affected to least)	Jobs lost	% of total retail	% of total employment
Basingstoke	2,602	39%	3.8%	Chesterfield	1,442	29%	3.2%
Bracknell	1,505	38%	3.3%	Birmingham	11,954	29%	2.2%
Guildford	2,031	37%	3.3%	Newcastle upon Tyne	4,996	29%	2.8%
Exeter	3,410	37%	3.6%	Blackpool	2,511	29%	3.4%
Warrington	3,546	36%	3.0%	Slough	1,914	29%	2.4%
Southampton	4,131	36%	3.4%	York	3,494	29%	3.7%
Cambridge	2,967	34%	2.3%	Gillingham	1,254	29%	3.4%
Ipswich	2,518	34%	3.4%	Woking	1,183	29%	2.8%
Bath	2,565	34%	4.3%	Hartlepool	1,141	29%	3.8%
Shrewsbury	1,696	34%	3.8%	Chatham	869	29%	3.6%
Dudley	1,960	33%	4.4%	Leeds	6,679	29%	1.9%
Swindon	3,811	33%	3.8%	Doncaster	2,447	29%	3.4%
Crawley	2,769	33%	2.9%	St Albans	1,680	28%	4.1%
Chelmsford	2,503	33%	3.6%	Luton	2,160	28%	2.2%
Reading	4,640	33%	3.2%	Wolverhampton	2,341	28%	2.5%
Harlow	1,323	33%	3.2%	Liverpool	8,493	28%	2.8%
Cheltenham	2,500	33%	3.8%	Preston	2,142	28%	2.5%
Colchester	2,473	33%	3.7%	Kingston upon Hull	4,018	28%	3.0%
Gloucester	2,980	33%	3.9%	Burton upon Trent	1,074	28%	2.7%
Solihull	2,203	32%	3.6%	Wigan	1,391	28%	3.4%
Oxford	3,181	32%	2.5%	Harrogate	1,516	28%	3.5%
Watford	2,431	32%	3.1%	Maidstone	1,601	28%	2.8%
Chester	2,222	32%	4.4%	Walsall	1,175	28%	2.8%
Milton Keynes	3,523	32%	2.4%	Stockton-on-Tees	1,153	28%	3.0%
Southend-on-Sea	2,081	32%	3.1%	Newcastle-under-Lyme	860	28%	2.6%
Norwich	4,175	32%	3.6%	Brighton and Hove	4,315	28%	3.4%
Carlisle	1,826	32%	3.8%	Northampton	2,926	28%	2.1%
Bournemouth	3,183	32%	3.7%	Redditch	1,089	28%	3.0%
Plymouth	4,095	32%	3.6%	High Wycombe	1,696	28%	3.1%
Hemel Hempstead	1,401	31%	1.7%	Gateshead	1,035	28%	1.6%
Lincoln	2,179	31%	3.8%	Wakefield	1,507	28%	2.3%
Stevenage	1,393	31%	2.9%	Grimsby	1,291	28%	3.1%
Peterborough	3,746	31%	3.4%	St Helens	1,226	27%	3.4%
Poole	2,588	31%	3.0%	Birkenhead	1,086	27%	3.0%
Basildon	1,886	31%	3.1%	Sutton Coldfield	1,085	27%	3.0%
Bedford	1,321	31%	2.8%	Scunthorpe	1,298	27%	3.0%
Stockport	1,795	31%	2.4%	Stoke-on-Trent	3,279	27%	2.6%
Eastbourne	1,870	31%	4.5%	Leicester	4,335	26%	2.1%
Coventry	3,853	31%	2.2%	Oldham	1,089	26%	2.5%
Sunderland	2,560	30%	3.6%	Halifax	1,199	26%	2.8%
London	12,2146	30%	2.3%	Blackburn	1,477	26%	2.5%
Bury	1,457	30%	3.3%	Manchester	8,881	26%	2.3%
Telford	1,865	30%	2.4%	South Shields	599	25%	3.1%
Middlesbrough	2,329	30%	3.3%	Worthing	1,418	25%	2.7%
Sheffield	8,024	30%	3.1%	Nottingham	5,662	25%	2.8%
Worcester	1,641	30%	3.1%	Bolton	1,973	25%	2.9%
Derby	3,505	30%	2.4%	Barnsley	1,151	25%	2.6%
Bristol	7,670	30%	2.4%	Rochdale	1,164	25%	2.9%
Mansfield	1,319	30%	3.7%	Huddersfield	2,084	24%	2.9%
Hastings	1,212	30%	3.7%	Nuneaton	746	24%	2.3%
Weston-Super-Mare	1,213	30%	3.7%	Bradford	3,353	24%	2.4%
Southport	1,498	30%	4.6%	West Bromwich	907	23%	2.2%
Portsmouth	3,477	29%	3.1%	Rotherham	870	23%	2.0%
Darlington	1,510	29%	3.3%	Salford	1,111	21%	1.3%
				Burnley	1,128	21%	3.1%

Source: Business Register and Employment Survey via Nomis, KPMG analysis.

Basingstoke, Bracknell and Guildford appear to be the worst affected, with up to 39% of retail jobs vulnerable in the shift towards online sales. Across all the towns and cities covered by our analysis, there could be nearly 400,000 job losses on the high street.

The rise in vacant retail space could see a fall in the price of retail premises, with landlords also potentially more amenable to accommodate the needs of new tenants, while planning rules are made more flexible in regard to the type of use. This should encourage new entrants to take up vacant premises on the high street, although there will in many cases still be a need for local government and the local community to get involved in order to preserve the vibrancy of the high street.

Shoppers tend to be attracted to a cluster of shops rather than make a visit to a single, standalone outlet, so as the high street's retail offering thins, remaining shops may need to regroup to attract shoppers' attention.

The remaining space on the high street could be converted to social and recreation use, catering for the needs of the local population. Some towns and cities already have a strong cultural and recreation offering but others could increase the offer to ensure they remain attractive as a location to live and visit.

"Retail will never again represent the same size in terms of space on the high street. Therefore, high streets have to become multi-purpose locations. The answer has to be a variety of use cases, such as residential, education, healthcare, cultural, technology, community and purpose-focussed retail and hospitality to name some."

Paul Martin, Head of Retail, KPMG in the UK

Assets to attract visitors

As people travel less for work or to shop, town and city centres will need alternative offerings to fill vacant space and to attract people to the area.

The new way of working at least partially from home will allow people more flexibility in choosing where they live. At the same time, the reduced requirement for physical office space will make companies more flexible about their base. Locations will need to offer more to attract both companies and people to their area. Those that succeed will be likely to have a range of cultural assets as well as easy access to green space, which will serve to boost the quality of living in the area.

We looked at existing offering across three categories: sports facilities; culture and recreation assets (ranging from amusement parks to museums and performing arts venues); and hospitality venues (including restaurants, cafe, pubs and bars).[6]

Larger cities enjoy a clear advantage in their ability to provide a large and varied cultural offering to visitors, as shown by the high scores across all three categories in London, Birmingham, Liverpool, Manchester and others. In comparison, smaller towns score less strongly and tend to focus on fewer types of attractions. Cambridge is an example of a stronger focus on culture and recreation, and relatively weaker scores elsewhere.

Once social distancing restrictions are lifted, and it becomes clearer how people's behaviour and preferences have been transformed, some of these businesses and assets are likely to adapt as a result while others are likely to open up, taking advantage of new opportunities. For example, a takeaway venue catering for office workers at lunchtime may target locals working from home that now meet neighbours for lunch or a local dinner.

The table offers only a glimpse of locations' starting point. It highlights those that may need to go further in developing new ways to attract people to their centres compared to others where the offering is already relatively rich.

6 We used 2019 employment data from the BRES to estimate the scale of offering in each location. Employment numbers were converted into a score index to capture the strength of each location across the three categories that we examined.

Table 3: Strength of local cultural offering

Town/city (A-Z)	Sports facilities	Culture and recreation	Restaurants, cafes, pubs and bars	Town/city (A-Z)	Sports facilities	Culture and recreation	Restaurants, cafes, pubs and bars
Barnsley	-0.04	-1.68	-0.66	Maidstone	-1.01	-0.12	0.05
Basildon	-0.13	-0.61	-0.50	Manchester	2.35	2.41	2.39
Basingstoke	0.04	-0.16	-0.60	Mansfield	-0.39	-0.68	-0.82
Bath	0.26	0.37	0.56	Middlesbrough	0.50	-1.44	0.07
Bedford	-0.74	-0.61	-0.57	Milton Keynes	-0.04	0.65	0.47
Birkenhead	0.26	-0.75	-1.29	Newcastle upon Tyne	1.54	1.26	1.63
Birmingham	1.68	2.15	2.41	Newcastle-under-Lyme	-0.74	-0.63	-0.84
Blackburn	0.23	-1.49	-1.00	Northampton	1.01	0.61	0.46
Blackpool	0.30	1.54	0.38	Norwich	1.04	1.24	0.89
Bolton	-0.82	0.11	-0.33	Nottingham	1.46	0.89	1.30
Bournemouth	1.17	0.18	0.70	Nuneaton	-0.66	-0.57	-0.68
Bracknell	-1.46	-0.86	-0.84	Oldham	-0.49	-0.41	-1.22
Bradford	0.50	0.11	0.21	Oxford	-0.66	0.30	0.85
Brighton and Hove	0.65	1.15	1.52	Peterborough	0.33	0.50	0.15
Bristol	1.67	1.80	1.99	Plymouth	0.83	0.84	0.86
Burnley	0.33	-0.57	-1.13	Poole	0.65	-0.17	0.21
Burton upon Trent	-0.10	-0.80	-0.66	Portsmouth	0.39	0.81	1.08
Bury	-0.66	-0.80	-0.85	Preston	0.23	0.45	-0.19
Cambridge	-0.04	1.51	0.75	Reading	0.83	-0.13	0.75
Carlisle	-0.66	-0.05	-0.51	Redditch	-1.73	-1.05	-1.16
Chatham	-1.24	-1.12	-1.52	Rochdale	-0.82	-0.89	-1.13
Chelmsford	-0.52	-0.19	-0.06	Rotherham	-0.59	-0.61	-0.57
Cheltenham	0.04	0.57	0.53	Salford	-1.52	0.77	-0.76
Chester	0.55	1.04	0.28	Scunthorpe	-0.63	-0.45	-1.03
Chesterfield	-0.34	-1.29	-0.60	Sheffield	1.78	1.48	1.75
Colchester	0.83	0.79	0.01	Shrewsbury	-0.66	-0.39	-0.14
Coventry	0.39	0.84	0.85	Slough	-2.27	-1.44	-0.68
Crawley	-0.82	-0.07	0.46	Solihull	-0.91	-0.78	0.02
Darlington	-0.39	-0.86	-0.40	South Shields	-1.21	-0.73	-1.08
Derby	0.94	0.61	0.65	Southampton	1.17	0.59	0.93
Doncaster	0.45	-0.68	-0.10	Southend-on-Sea	0.19	0.68	0.49
Dudley	-1.52	0.42	-0.75	Southport	-0.34	-0.43	-0.44
Eastbourne	-0.91	-0.41	-0.29	St Albans	0.08	-0.59	-0.32
Exeter	-0.13	0.25	0.50	St Helens	0.08	-0.13	-0.75
Gateshead	-0.74	-0.61	-0.84	Stevenage	-0.34	-1.20	-0.66
Gillingham	-0.04	-0.29	-0.66	Stockport	-0.80	-0.52	-0.43
Gloucester	-0.51	-0.57	0.13	Stockton-on-Tees	-1.81	-0.68	-1.10
Grimsby	-1.21	-1.25	-1.25	Stoke-on-Trent	0.50	0.62	0.53
Guildford	0.19	-0.36	-0.08	Sunderland	-0.08	-0.48	0.11
Halifax	-0.66	0.51	-0.71	Sutton Coldfield	-0.59	-1.16	-0.26
Harlow	-0.34	-1.16	-0.85	Swindon	0.12	0.07	0.26
Harrogate	-0.66	-0.37	-0.25	Telford	-0.39	0.41	-0.08
Hartlepool	-0.52	-0.86	-0.82	Wakefield	-1.12	-0.28	-0.45
Hastings	-1.52	-0.48	-0.47	Walsall	0.12	-1.68	-0.95
Hemel Hempstead	-0.34	-0.61	-0.86	Warrington	-0.18	0.17	0.02
High Wycombe	0.04	-0.78	-0.88	Watford	0.65	-0.28	-0.06
Huddersfield	0.74	0.03	-0.10	West Bromwich	-1.81	-1.02	-1.34
Ipswich	0.65	0.99	0.09	Weston-Super-Mare	-0.66	-0.17	-0.47
Kingston upon Hull	0.50	0.52	0.62	Wigan	0.67	-1.09	-0.57
Leeds	1.68	1.91	1.83	Woking	0.26	0.41	-0.53
Leicester	1.50	0.96	1.03	Wolverhampton	0.98	-0.17	0.39
Lincoln	0.00	-0.25	0.07	Worcester	0.19	0.10	-0.17
Liverpool	2.47	1.89	2.05	Worthing	-0.45	-0.41	-0.34
London	4.39	4.95	5.44	York	-1.01	1.23	0.98
Luton	0.55	-0.34	-0.07				

Source: Business Register and Employment Survey via Nomis, KPMG analysis.

Bringing it all together

The changes set by COVID will pull town and city centres in different directions. Combining the impact of home working and loss of retail outlets with the strength of current cultural assets, we calculated an index of vulnerability for towns and cities in England.

Table 4: Post-COVID vulnerability of town and city centres in England

Town/city ranking (least affected to worst)							
London	1.32	Doncaster	0.37	Eastbourne	0.01	Burton upon Trent	-0.32
Liverpool	0.97	West Bromwich	0.35	Poole	-0.01	Newcastle-under-Lyme	-0.34
Burnley	0.88	Bristol	0.34	Northampton	-0.02	Bedford	-0.36
Birmingham	0.88	Gillingham	0.33	Luton	-0.04	Chesterfield	-0.36
Leicester	0.87	Nuneaton	0.27	Stockton-on-Tees	-0.05	St Albans	-0.37
Manchester	0.85	Halifax	0.27	Preston	-0.06	Redditch	-0.37
Huddersfield	0.78	Weston-Super-Mare	0.26	Bournemouth	-0.06	Mansfield	-0.37
Rotherham	0.77	Hartlepool	0.26	Gateshead	-0.07	Bury	-0.39
Bradford	0.76	Middlesbrough	0.25	Norwich	-0.11	Shrewsbury	-0.46
Nottingham	0.71	Oldham	0.25	Solihull	-0.12	Crawley	-0.50
Newcastle upon Tyne	0.69	Bolton	0.23	Southampton	-0.16	Ipswich	-0.50
Worthing	0.65	Hastings	0.22	Woking	-0.16	Exeter	-0.55
Stoke-on-Trent	0.65	Blackburn	0.21	Walsall	-0.18	Peterborough	-0.58
Sheffield	0.64	Wigan	0.21	Telford	-0.18	Harlow	-0.62
York	0.64	Wakefield	0.20	Chatham	-0.20	Milton Keynes	-0.64
Kingston upon Hull	0.61	Salford	0.20	Cambridge	-0.20	Reading	-0.64
Barnsley	0.59	Rochdale	0.16	Cheltenham	-0.21	Basildon	-0.65
Oxford	0.57	Southend-on-Sea	0.13	Birkenhead	-0.21	Stockport	-0.67
Plymouth	0.55	Maidstone	0.13	Bath	-0.21	Slough	-0.76
South Shields	0.54	St Helens	0.11	Darlington	-0.22	Watford	-0.81
Leeds	0.54	Sunderland	0.11	Dudley	-0.22	Swindon	-0.86
Blackpool	0.52	Grimsby	0.08	High Wycombe	-0.23	Guildford	-0.88
Brighton and Hove	0.50	Coventry	0.08	Stevenage	-0.23	Warrington	-1.32
Wolverhampton	0.49	Worcester	0.08	Colchester	-0.26	Basingstoke	-1.70
Portsmouth	0.48	Southport	0.04	Chester	-0.28	Hemel Hempstead	-1.80
Scunthorpe	0.46	Harrogate	0.04	Chelmsford	-0.29	Bracknell	-2.55
Derby	0.43	Lincoln	0.03	Gloucester	-0.30		
Sutton Coldfield	0.42	Lincoln	0.03	Carlisle	-0.32		

Source: Business Register and Employment Survey via Nomis, KPMG analysis.

Cities like London, Liverpool, Birmingham and Manchester benefit from a strong cultural offering that partially compensates for the loss in commuter footfall and retail outlets on the high street. On the other end of the scale, places like Warrington, Basingstoke, Hemel Hempstead and Bracknell are hit relatively hard by the loss of commuter footfall and retail offering, while have more limited cultural offering to attract people to their centres.

The size of London makes it a relative outlier in our list of cities as it does not have a single contiguous city centre in a traditional sense. The score for London combines the relatively diverse character of areas such as Canary Wharf focussing on office space and the West End of London with a large endowment of cultural amenities. In this light it is unlikely that the strength of cultural amenities on offer in one part of the city can compensate for the loss of commuter footfall in a different part, which could test the resilience of some parts of London.

Levelling up post-COVID

The COVID pandemic has put in motion transformational changes that are likely to dominate the agenda for years to come. It has also shifted the balance somewhat, with more affluent city and town centres around London in the South East potentially hit harder and requiring more efforts to refocus their local economies than some areas in the north of England.

The challenge for government, as it turns its focus to the levelling-up agenda, is to incorporate the changes brought about by the pandemic into its strategy. The structural challenges to city centres mirror the challenges facing transport networks post-COVID as the drop in footfall is reflected in falling passenger numbers.[7] Fostering collaboration between businesses and local policymakers can help rethink the journey to work with a focus on lower carbon, more customer-orientated and better-connected transport networks. Other important areas include prioritising investment in high-speed broadband and 5G connectivity.

As we leave the pandemic behind, hopefully sometime in 2021, towns and cities across the UK will need help and space to rethink the purpose of their centres. High streets will need to be reimagined as cultural and recreational hubs that will act as magnets for businesses and jobs able to transform less prosperous areas.

7 CBI/KPMG, Commuting beyond the Coronavirus, July 2020.

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