Highways Technical Note

Land Southeast of M6 Junction 16

Review of Transport Modelling

TRANSPORT PLANNING
INFRASTRUCTURE DESIGN
an RSK company

Our reference: SCP/260886/TN01 – Rev1.2

Author:	Date: 05/10/2026	Reviewer: TR	Date: 05/10/2026	Project Manager: LC	Date: 05/10/2026
TR/LC					

1.0 INTRODUCTION

1.1. SCP has been commissioned by Audley Rural Parish Council to undertake a review of the transport modelling work undertaken in support of the planning application for an employment development at Land Southeast of M6 Junction 16 (J16) of the M6, Newcastle-under-Lyme.

1.2. The planning application was submitted to Newcastle-under-Lyme Borough Council (NuLBC) in Spring 2025 (planning application reference 25/00346/OUT) and at time of writing is pending determination.

1.3. The planning application seeks permission for:

"Development of up to 220,000m² GIA of storage and distribution units (B8), general industrial units (B2) and industrial units (E(g)(iii)); training and education (F1(a)) and occupier support services accommodation; service yards and parking areas; new main vehicular access off the A500 and emergency access off Barthomley Road; lorry parking and ancillary driver amenity facilities; with associated landscaping, earthworks, drainage and attenuation features and other associated works (outline, all matters reserved except for the principal means of vehicular access to the Site)."

1.4. The site is allocated as a strategic employment development site in the recently adopted Newcastle-under-Lyme Local Plan 2020-2040 under Policy AB2 'Land at Junction 16 of the M6'.

2.0 SCOPE OF REPORT

2.1. This Technical Note has been prepared for Audley Rural Parish Council to present the findings of SCP's review of the supporting transport work submitted alongside the planning application, with a particular focus upon the transport modelling work provided in support of the application. This is following some specific concerns that Audley Rural Parish Council have identified, as the Parish Council within which the proposed development site is located, in their consideration of the planning application.

2.2. These concerns can be summarised as follows:

- Existing operational and safety issues associated with Junction 16 and the A500/Alsager Road slip roads.
- Potential increases in congestion and resulting traffic reassignment.
- The potential for increased use of local roads as rat-runs.
- Implications associated with existing weight restrictions and Traffic Regulation Orders.

- Potential use of alternative routes and junctions to avoid congestion.
- Risks associated with the future use of the proposed emergency access.
- Transport implications arising from the proposed 200-space HGV facility.
- Highway and transport impacts associated with the proposed employment development.
- The realism and deliverability of proposed sustainable travel measures.
- Walking and cycling accessibility to the site.
- Potential opportunities for alternative or additional mitigation measures

2.3. This Technical Note includes the following:

- List of the technical information and consultation responses reviewed;
- Summary of the key transport features of the proposed development;
- A review of the approach to traffic assessment adopted in the planning submission;
- Commentary on the traffic modelling undertaken in support of the application;
- Identification of any weaknesses or gaps in the transport material submitted in support of the application, including reference to Highway Authority consultation responses; and
- Recommendations to Audley Parish Council in terms of technical concerns with the transport work supporting the application and potential grounds for a highways objection to the planning application.

3.0 INFORMATION SOURCES

3.1. In preparing this report, SCP has reviewed the following information:

- Transport Assessment (TA) Rev C dated 17th April 2025, prepared by PJA;
- Transport Technical Note (TTN) dated 08/04/2026, prepared by PJA;
- Framework Travel Plan Rev B dated 9th April 2025, prepared by PJA;
- Access Strategy Plan drawing prepared by SGP Architects;
- Illustrative Site Masterplan drawing prepared by SGP Architects;
- Consultation responses from National Highways (NH), Cheshire East Council, Active Travel England and Staffordshire County Council (SCC) Public Rights of Way; and
- NuLBC Adopted Local Plan 2020-2040.

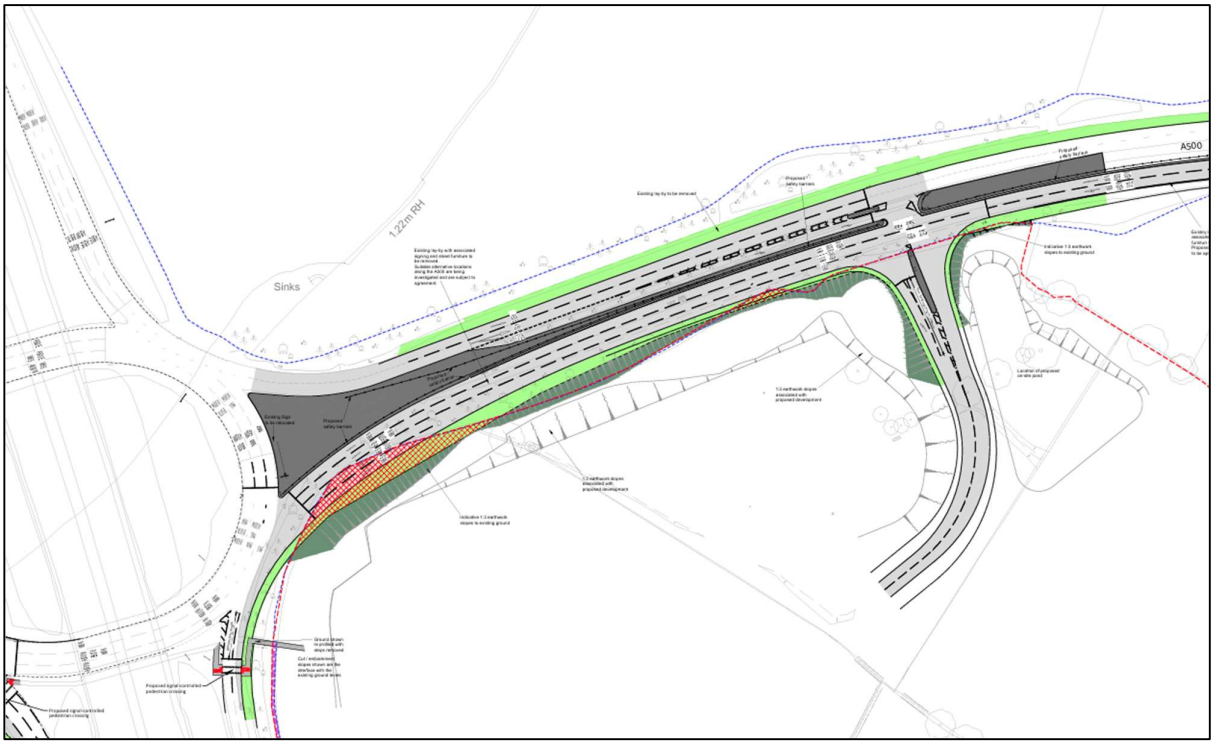
4.0 KEY TRANSPORT FEATURES OF PROPOSED DEVELOPMENT

Vehicle Access Strategy

4.1. Vehicle access to the proposed development is to be provided via a new signalised junction on the A500, situated approximately 220m east of M6 J16. The junction will provide access to the main spine road of the site including access to all units, the lorry park and education hub. There will be a dedicated right turn lane from the A500 eastbound. This right turn lane would be approximately 150m long, which could accommodate circa 8 articulated heavy goods vehicles (HGVs), or circa 25 cars. This is the only vehicle access proposed to serve the development.

4.2. An extract from the proposed access arrangement drawing is shown in Figure 1.

Figure 1: Proposed Access Arrangement – A500



4.3. The proposed access arrangement appears to follow standard design parameters however there is no stage 1 Road Safety Audit provided with the TA, which is a requirement for schemes on the Strategic Road Network. There is also no Walking, Cycling & Horse-Riding Assessment and Review. These assessments are a requirement in accordance with NH Guidance 'Strategic road network and the delivery of sustainable development' (Updated December 2022), which states at para 25:

"a Walking, Cycling & Horse-Riding Assessment and Review in compliance with GG 142 must be completed during the options or concept stage of a development that proposes modifications to the SRN, which enables opportunities for new or improved facilities for pedestrians, cyclists and horse-riders to be identified. In turn, development promoters should prepare a preliminary design and Stage 1 Road Safety Audit (see GG 119) before planning permission is applied for, to demonstrate that road safety issues have been considered."

4.4. SCP would recommend that both a stage 1 Road Safety Audit and a Walking, Cycling & Horse-Riding Assessment and Review should be provided by the applicant at the planning application stage and these would normally form part of the TA.

4.5. The NH Guidance 'Strategic road network and the delivery of sustainable development' also states that:

"New connections (for example, new junctions or direct accesses) on the SRN lead to more weaving and turning manoeuvres, which in turn create additional risk to safety and reduce the reliability and efficiency of journeys, resulting in a negative impact on overall national economic activity and performance.

On this basis the principle of creating new connections on the SRN should be identified at the plan-making stage in circumstances where an assessment of the potential impacts on the SRN can be considered alongside whether such new infrastructure is essential for the delivery of strategic growth. Moreover, the company will need to be satisfied that all reasonable options to deliver modal shift, promote walking, wheeling and cycling, public transport and shared travel to assist in reducing car dependency, and locate development in areas of high accessibility by sustainable transport modes (or areas that can be made more accessible) have been exhausted before considering options for new connections to the SRN. There may also be limited opportunity for new connections to be considered as part of public funding programmes to support new development, although necessary infrastructure in up-to-date plans and strategies should be favoured in such instances.

Where this has not occurred, there will be no new connections on those sections of the network designed for high-speed traffic other than for the provision of signed roadside facilities, emergency vehicle access, public transport interchanges and the company's construction and maintenance compounds, where these can be provided safely. The presumption against new connections includes temporary access points for construction vehicles."

4.6. It is assumed that NH is satisfied that the proposed formation of a new connection onto the SRN meets their criteria set out in their guidance however it is noted that this guidance acknowledges that *"new connections (for example, new junctions or direct accesses) on the SRN lead to more weaving and turning manoeuvres, which in turn create additional risk to safety and reduce the reliability and efficiency of journeys."* This highlights the importance of providing a Road Safety Audit of the proposed access on the A500 as part of the planning application.

4.7. The A500 to the east of, and including, the Junction 16 roundabout is managed by National Highways. This section of the A500 therefore serves a strategic movement function and is the main diversion route if there is an incident / closure on the M6 between J16 and 15. West of the roundabout, the A500 is managed by Cheshire East Highways.

4.8. In terms of the operation of the proposed access onto the A500, this will be covered in the 'Modelling' section of this report. However, at this stage SCP would note that in practice, incidents on the M6 and the A500 have the potential to cause significant delays and queueing in this area, which could prevent vehicles from accessing or exiting the development in the intended manner. Whilst it is not standard practice to assess such atypical scenarios as part of a TA, the National Planning Policy Framework (NPPF) does require that "reasonable future scenarios" are considered (NPPF August 2026 Policy TR6 part 3). These scenarios should be agreed with the relevant Highways Authorities in advance.

4.9. In this instance, given that the A500 serves as a designated diversion route to accommodate traffic from the M6 in emergency situations, there could be an argument that these diversion scenarios are 'reasonable future scenarios' and should be assessed as part of the application. It is noted that the latest consultation response from National Highways includes this point which is made by their safety team:

"Junction 16 and the A500 is the Main Diversion route if there is an incident / closure on the M6 between J16 and 15, Has the modelling taken this into account."

4.10. No such scenarios are included in the TA, and the diversion route function of the A500 is not mentioned in the report, therefore it can only be assumed that these haven't been requested by National Highways or Staffordshire County Council Highways. It is a potential weakness of the assessment however that these diversion scenarios have not been considered and it is surprising that National Highways have raised this as a potential concern if they have already agreed all of the modelling assessment parameters with the applicant's transport consultant.

Emergency Access

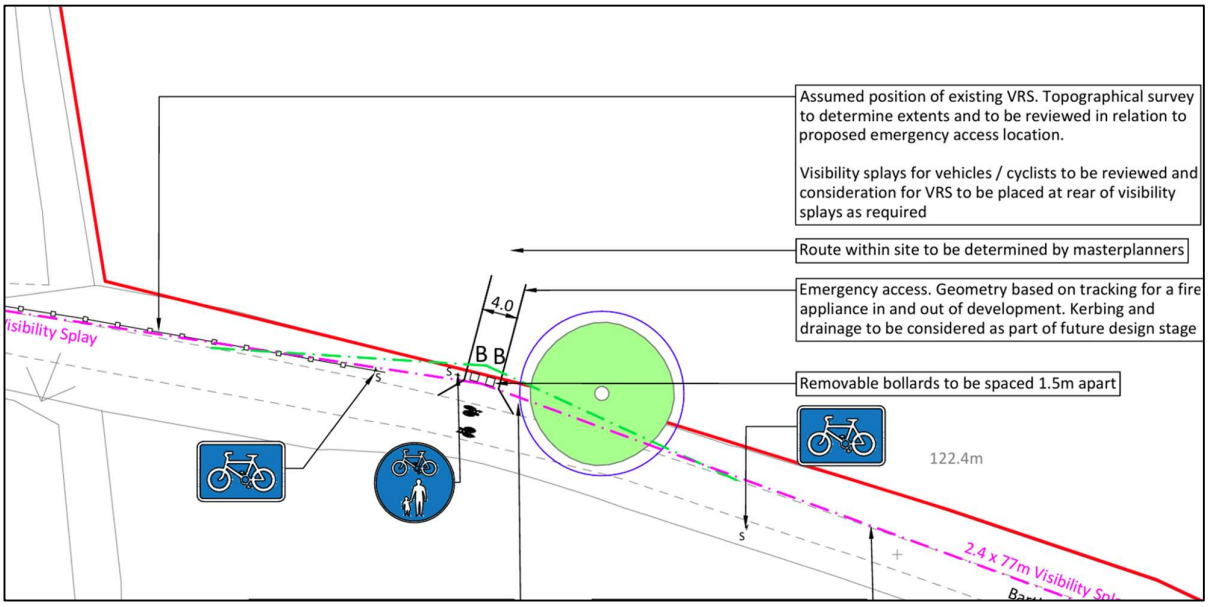
4.11. An emergency access point to the site is proposed via Barthomley Road at the southern end of the site. It was originally proposed in the TA that this would be controlled via lockable bollards to prevent use by unauthorised vehicles. The TTN states that following concerns from SCC Highways, the emergency access to the site is now proposed to be controlled by a locked gate. This would be opened by the emergency services if they required access. Adjacent to the locked gate would be a 2m wide entrance for pedestrians and cyclists. This detail is not shown on any drawings and would be controlled by planning condition.

4.12. The control of the emergency access by lockable gate is a standard method and there is no reason to assume that this would be abused and used as an alternative access for non-emergency vehicles. However, it would be useful for the proposed emergency access design to be shown on a plan as part of the application, to enable all parties, including the emergency services, to view the proposal.

4.13. SCP consider that it will be for the emergency services to confirm whether the strategy is acceptable to them however there is no confirmation within the TA or TTN that the emergency services have been consulted on the proposed emergency access route. It is noted that emergency access routes are normally required to provide a minimum of 3.7m effective carriageway width and large sections of Barthomley Road are below this width and the route is relatively poorly surfaced in places. The route can also be temporarily blocked by farm animals crossing from one field to another. It is recommended that swept path assessments for the necessary fire tender vehicles should be provided to demonstrate that such vehicles can access all along the proposed Barthomley Road emergency access route.

4.14. Furthermore, in the event that an incident on the A500 / M6 had caused the main site access from the A500 to be inaccessible to the emergency services and the emergency access route was needed for the emergency services, it is likely that a lot of general traffic would be using Barthomley Road as an alternative route to avoid the A500 and, given the narrow nature of the route, this could effectively become blocked by vehicles, preventing satisfactory access to the site for the emergency services. Barthomley Road is known to serve as an alternative route for traffic avoiding congestion on the A500 and this is therefore a foreseeable scenario that SCP consider should be taken into consideration by the emergency services, along with the risk of temporary blockage of the route caused by farm animal crossings.

Figure 2: Proposed Emergency Access Arrangement as presented in TA – Barthomley Road



Sustainable Travel Access Strategy

Active Travel

4.15. The site is relatively remote from large residential populations, and the TA acknowledges that walking is not likely to be a viable mode of access for employees (adopting a 0% mode share target for pedestrian trips).

4.16. Access for cyclists is also relatively poor. Whilst the TA includes proposals for a proposed active travel route between the site and Audley, using Moat Lane, Park Lane, B5500 Nantwich Road, B5500 New Road, B5500 Raven's Lane and B5500 Audley Road, the TTN states that these proposed active travel improvements have now been dropped from the scheme.

4.17. As cyclists are not allowed to access the site via the A500, the site is considered to be effectively inaccessible to cyclists other than those who live in close proximity and are confident enough to cycle on narrow rural lanes with no lighting.

4.18. The TA considers that with the proposed Active Travel Route improvements, a suitable mode share target for employee cycle trips to the site is 1%. However, no updated mode share is provided in the TTN to reflect the removal of the active travel improvements, which would inevitably reduce the appeal of cycling and therefore the projected cycle mode share for employee trips.

4.19. The site is effectively inaccessible for pedestrians and cyclists which could be considered contrary to the aims of the NPPF which notes at Policy TR1 that proposed development should be located "where it can support sustainable patterns of movement and make effective use of existing or proposed transport infrastructure".

4.20. The NPPF also states at Policy TR3 that:

"Development proposals which could generate a significant amount of movement, in the context of the area within which they would be situated, should be in locations that are sustainable (or which

can be made so, taking into account planned improvements, including any provided for as part of the development itself). This means the location should limit the need to travel, particularly by private car, and offer a genuine choice of transport modes for residents and users, unless the nature of the development would make this impractical".

Public Transport

4.21. Much emphasis is placed on potential improvements to bus access to the site to maximise sustainable accessibility.

4.22. The TA put forward a strategy which would deliver public transport by way of extending existing bus services and providing demand responsive transport. This was to be delivered in a phased manner over an eight year subsidy period at a total cost of £1.7m. The TTN reports that feedback provided by SCC identified a preference to deliver a standalone bus service specifically to the development and that the development would require two buses for an eight year subsidy period, leading to a total cost of £3.2m. Taking into account fare revenue for a scenario whereby 5% bus mode share (165 employees) is achieved for the development, the TTN states that a S106 payment of £2,425,266 would be payable to SCC to deliver the development bus service.

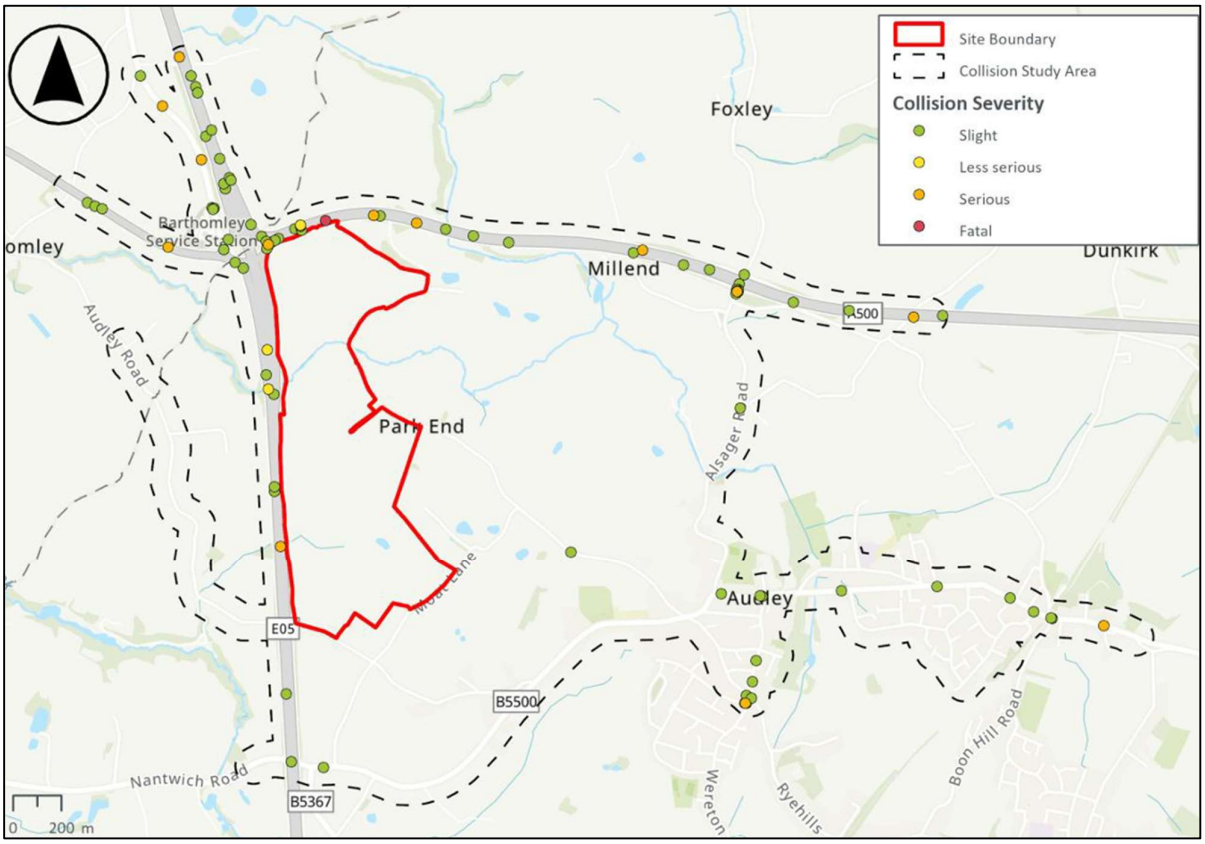
4.23. No detail is provided in the TTN regarding the proposed route/routes of a dedicated bus service for the site. It would be expected that the proposed routeing of the bus service would form part of the public transport strategy at this stage, to enable the feasibility of the proposal to be fully considered.

Highway Safety

4.24. The TA includes a review of the accident record for the surrounding road network including the Junction 16 approaches and slip roads, based on data from SCC covering the seven-year period January 2018-January 2025 and data from Cheshire East Council covering the five-year period 01.07.2019 – 30.06.2024. It is unclear why different periods have been assessed for the different authority areas.

4.25. The accident plot from the TA is shown below.

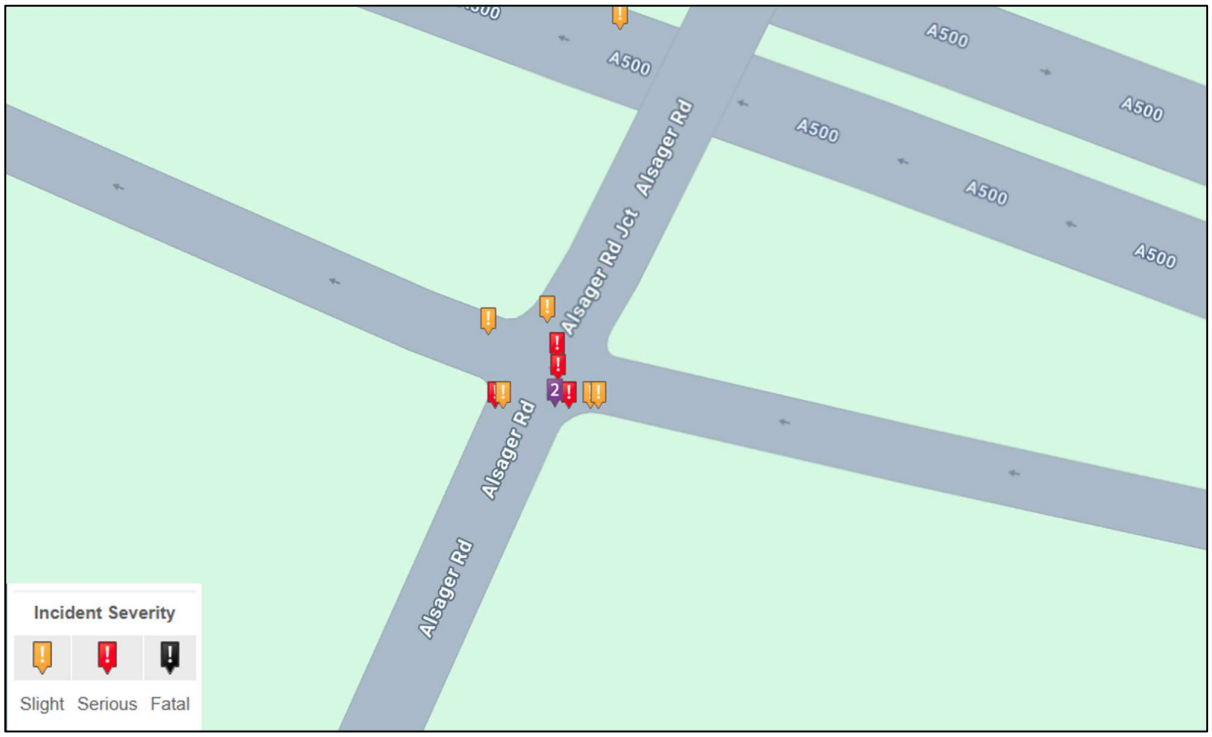
Figure 3: Accident Location Plot



4.26. The TA provides detail of the accident record according to the junctions and links within the study area however does not identify any underlying safety issues. SCP consider that there is a particular accident cluster around the Alsager Road / A500 westbound off and on slips where the TA reports a cluster of 7 incidents occurring the majority of which (4) resulted in serious injury.

4.27. Review of the latest accident record from crashmap.co.uk shows that there have been 11 accidents at this location in the last 5 year period up to 2025. These are shown in Figure 4.

Figure 4: Alsager Road / A500 Accident Plot (2021-2025)



4.28. The latest accident record shows a clear cluster of accidents (11) at this location including 5 serious injury accidents and 6 slight injury accidents. There is therefore evidence of an underlying safety problem here that should be considered in detail as part of the TA. From a review of the conditions on the ground, SCP note that drivers will use the slip road in an attempt to bypass queues on the A500 and there is therefore a relatively high proportion of straight ahead movements from the off-slip to the on-slip, often approaching at high speed and having to cross two lanes of traffic.

4.29. This driver behaviour could become more frequent should the proposed development lead to longer queues on the A500 westbound at any time of the day. As the proposed development access arrangement introduces a stop line on the A500 approximately 300m closer to this slip road arrangement than the current stop line, it would be expected that queues would be more likely to reach back to this point on the network more frequently and this accident blackspot could therefore experience a significant increase in conflicting vehicle manoeuvres. SCP consider that this issue hasn't been fully assessed within the TA and no mitigation is proposed at this location to address the potential impact.

4.30. As noted previously, the TA does not include a Road Safety Audit for the proposed site access onto the A500. It is unclear whether one has been undertaken however it should form part of the application submission to enable a full understanding of any safety issues identified with the proposed design at this stage.

4.31. The proposed mitigation works at the J16 roundabout include new footway and controlled pedestrian crossing of the M6 southbound on-slip and M6 northbound off-slip. These crossings do not provide for safe pedestrian access between the site and the services to the north-west of the roundabout, which are likely to be the main destination for any pedestrian trips generated by the development in this area. This is a safety concern.

5.0 APPROACH TO TRAFFIC ASSESSMENT

Trip Forecasts

5.1. The TA provides details of the trip forecasting methodology applied for the development. It states that the trip rates for the employment development have been previously agreed through scoping with NH. The trip forecasting methodology for the employment development is based on the TRICS trip rate database which is a standard methodology.

5.2. From a brief review of the TRICS report provided at Appendix G of the TA, SCP would note that at least some of the TRICS sites used in the survey sample have significantly better sustainable transport access than the J16 site. The vehicle trip rates derived from this sample may therefore be optimistic for the J16 site, which as a best-case scenario (assuming the bus strategy achieves a 10% bus mode share and that some employees will cycle despite the lack of suitable cycle facilities), is projected to have an 89% car / motorcycle journey mode share. For example, one site in the TRICS sample has a car mode share of 70.6%, much lower than that assumed for the J16 development.

5.3. It would not be unreasonable to expect that the traffic assessments undertaken would have included a sensitivity test scenario that uses higher vehicle trip rates to reflect the relatively poor sustainable accessibility of the site (and to reflect a minimum bus mode share of 5% which is what the proposed S106 contribution is based on), to allow an understanding of how a less optimistic sustainable accessibility scenario would affect the network.

5.4. The trip forecasts for the proposed lorry park are based on a single day survey of the Rothwell Truck Stop at Orton, off the A14. Whilst basing the forecasts on a similar sized site is a valid approach, the use of a site off the A14 is arguably not suitably representative as the A14 is a dual carriageway that carries significantly less traffic than the M6 (A14 average weekday flow circa 78,000 vehicles vs M6 average weekday flow circa 100,000 vehicles). It is therefore likely to attract fewer visits than the proposed facility off Junction 16. The Lorry Park trip forecasts used in the assessment could therefore be an underestimate however appear to have been accepted by NH and SCC Highways.

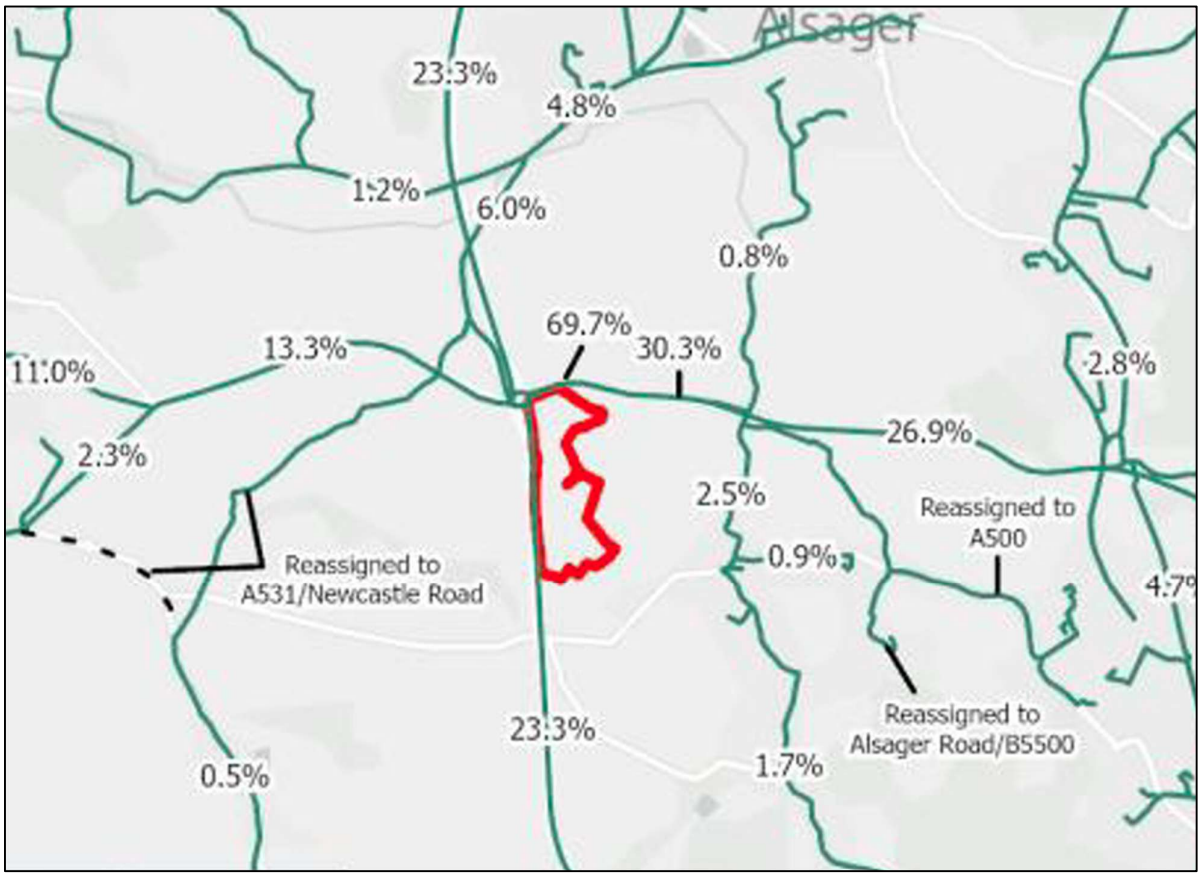
Vehicle Routeing

5.5. The traffic assessment bases the routeing of employee car trips to and from the site on a gravity model using Census journey to work data and routes the trips using GIS software that calculates the quickest route between origin and destination. The TA states that "*the tool will show trips rat-running on quiet roads which would be unsuitable for large proportions of development traffic. In these instances, manual adjustments have been applied to the trip assignment to derive a more suitable route"*.

5.6. The manual adjustments affect three routes and from a review of these adjustments, SCP consider that they seem reasonable and shouldn't ultimately make a significant difference to trip numbers on the local network.

5.7. Figure 5 shows an extract of the trip distribution figure presented in the TA.

Figure 5: Forecast Trip Distribution Extract from TA



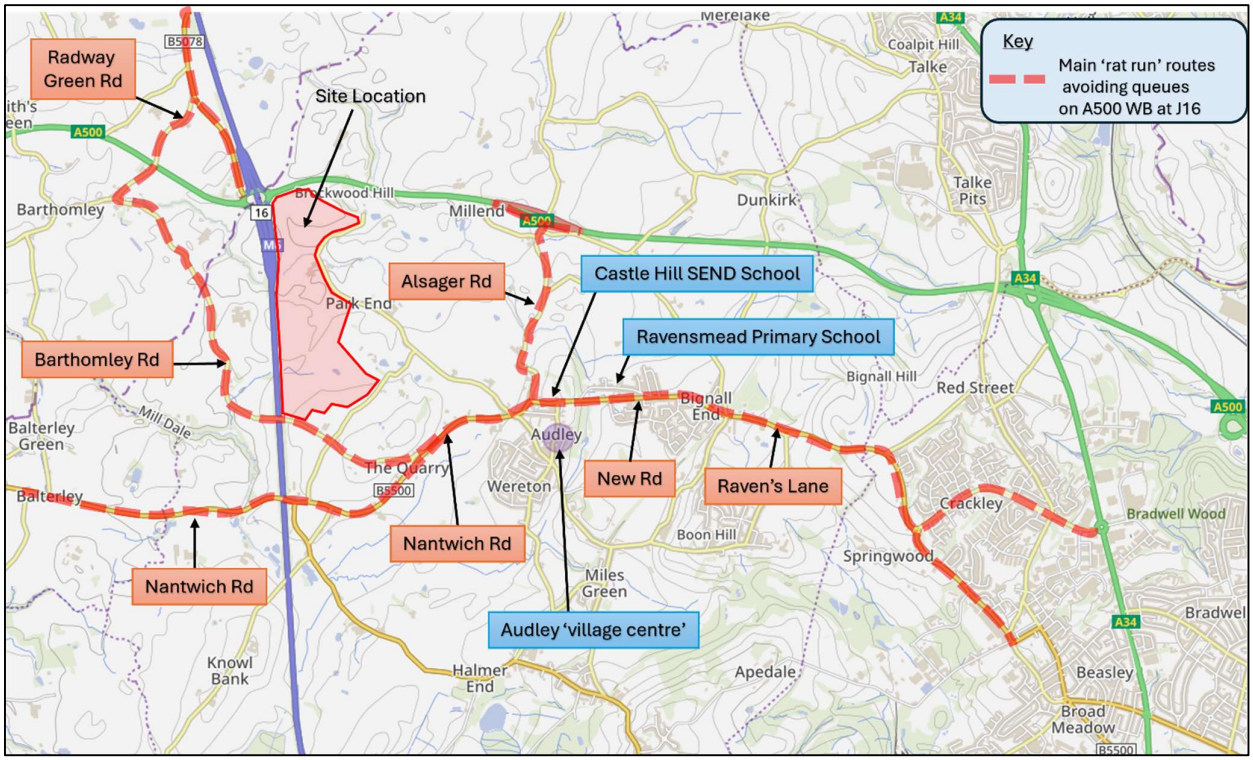
5.8. In terms of employee vehicle trips through Audley, the assessment shows 2.5% of trips routeing via Alsager Road north of the village and 0.9% of trips routeing along the B5500 Nantwich Road east of the mini roundabout junction. 1.7% of trips are forecast to route via Hougher Wall Road south of the village.

5.9. In terms of the number of development vehicles on these routes, based on the employee trip forecasts in the TA, these would be negligible for example 2.5% of employee trips in the morning peak hour would equate to 8 trips.

5.10. The trip distribution and assignment exercise presented in the TA appears to be a reasonable approach and predicts very low levels of development traffic routeing through the village. It is known however that roads within the village are used by general traffic avoiding the A500 when it experiences congestion issues.

5.11. The main 'rat run' routes that are used for on these occasions are illustrated in Figure 6.

Figure 6: Main Rat Run Routes avoiding Queues on A500 Westbound



5.12. It can be seen from Figure 6 that the local roads in and around Audley provide a viable alternative route for traffic seeking to avoid queues on the A500 westbound and this rat running is known to occur on a relatively frequent basis. The main roads affected are Alsager Road, Nantwich Road, Barthomley Road, Radway Green Road, New Road and Raven's Lane. The rat run routes along Raven's Lane, New Road, Alsager Road and Nantwich Road are known to accommodate rat running HGVs in addition to cars and vans.

5.13. These rat run routes are unsuitable for accommodating significant traffic flows. For example, Barthomley Road is a narrow rural lane with a 7.5 tonne vehicle weight limit, and only single file traffic working for large sections.

5.14. Alsager Road is also subject to a 7.5 tonne weight limit to the north of the A500 junction. New Road and Raven's Lane are built up residential streets with on-street parking reducing the effective carriageway width. There are also two schools in the vicinity of the route and these would be particularly sensitive locations in relation to significant increases in traffic.

5.15. Other routes in the area also experience rat running in response to incidents on the A500 and M6.

5.16. If the proposed development were to increase instances of long queues on the A500 then this would be likely to lead to an increase in vehicle movements through the village with resulting effects upon highway safety and capacity that would need to be assessed.

5.17. The calculations for HGV movements used in the assessment have been undertaken based on the latest DfT Road Freight Statistics which appears to be a reasonable approach and forecasts all HGV movements using the A500 and M6 for access.

Extent of Traffic Modelling

5.18. The TA only provides a traffic assessment of the J16 roundabout. The consideration of the effect of development trips on junctions further afield is limited to Table 7.9 in the TA which simply provides the number of forecast peak hour development trips at various junctions in the area and concludes that except for J16, the number of development trips at the junctions does not warrant any further assessment, with some references to Google maps traffic to justify this.

5.19. This is not considered to be a sound basis for judging whether a junction warrants further consideration in terms of capacity effects at all of the junctions.

5.20. A traditional threshold for triggering the requirement for capacity assessment at a junction is where a development increases flows by 30 or more trips in a peak hour. Using this threshold as a guide, the forecast development trips reported in the TA would warrant further investigation of capacity effects upon the following junctions on the local highway network:

- A500 / A34 (up to 38 trips in a peak hour)
- A500 / A527 (up to 36 trips in a peak hour)
- A500 / A5271 / B5370 (up to 76 trips in a peak hour)
- Meremoss roundabout (up to 70 trips in a peak hour)
- A500 / A5020 (up to 59 trips in a peak hour)
- A500 / B5071 (up to 43 trips in a peak hour)
- B5078 / Radway Green Road (up to 30 trips in a peak hour)
- B5078 / Crewe Road (up to 30 trips in a peak hour)

5.21. Furthermore, capacity assessments can also be justified at accident cluster locations where development is likely to increase trips. On this basis, and noting the safety concerns highlighted in the highway safety section of this report, it would be expected that an assessment of the A500 / Alsager Road would also be required to ensure the impact at this sensitive location with a high rate of accidents has been fully considered.

5.22. SCP therefore consider that the TA does not fully assess the likely traffic impacts of development on the local highway network and does not provide sufficient evidence that there would be no severe impact upon the local highway network in terms of capacity and safety.

A500 Traffic Flows

5.23. The traffic modelling presented in the TA is based on survey data collected in September 2022. The future year assessment that is modelled is 2040 and the surveyed 2022 traffic has been factored up to 2040 traffic levels using Tempro. This results in 13% growth being applied to the 2022 traffic to establish the 2040 baseline or ‘reference case’ traffic levels on the network.

5.24. It is noted however that there is DfT traffic count point on the A500 (count point 37261) located around 3.8km to the east of the site that has recorded 11% traffic growth on the A500 between 2022 and 2025 (47,644 AADT in 2022 and 52,814 AADT in 2025). The data can be viewed at the following link:

https://roadtraffic.dft.gov.uk/count-points/37261

5.25. This demonstrates that the A500 has experienced significant traffic growth since the surveys undertaken in 2022. This would be consistent with observations of current queueing on the A500 westbound which is significantly greater now (in 2026) than were recorded in the September 2022

surveys (as reported in the TA). For example, the maximum observed queue from the 2022 surveys was in the order of 230m in the AM peak and 90m in the PM peak. Google maps traffic data from the current time (September 2026) shows significantly greater queueing during these periods across all weekdays. Figure 7 shows Google Maps traffic queue information for a Wednesday AM (08:00) and PM (17:30) to illustrate.

Figure 7: Google Maps Traffic Queue Information 2026

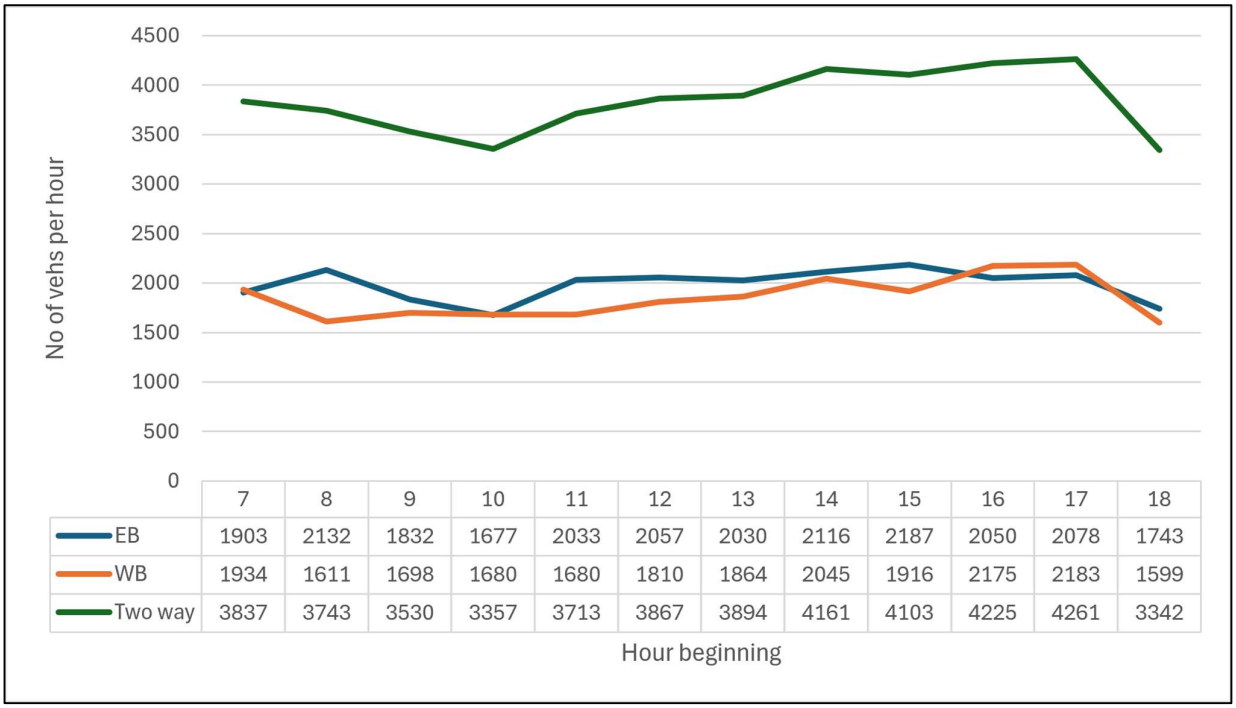


5.26. It can be seen from the Google Maps data that current queueing on the A500 westbound approach is significant, at nearly 1km of red and a further 600/700m of orange. This is much greater than reported in the 2022 surveys upon which the traffic model used in the assessment has been based.

5.27. The level of growth experienced on the A500 as evidenced by the traffic flow data and the queue information is not reflected in the future year traffic modelling upon which the assessment of the proposed development scheme has been based. The future year assessment model is therefore likely to underestimate the baseline traffic flows on the network particularly on the A500 East arm which is of critical importance given that the proposed development access is to be located here.

5.28. The DfT count data can also be used to show the flow profile across the day. The data for the 2025 count has been extracted and is shown in the graph in Figure 8.

Figure 8: A500 Daily Flow Profile 2025



	7	8	9	10	11	12	13	14	15	16	17	18
EB	1903	2132	1832	1677	2033	2057	2030	2116	2187	2050	2078	1743
WB	1934	1611	1698	1680	1680	1810	1864	2045	1916	2175	2183	1599
Two way	3837	3743	3530	3357	3713	3867	3894	4161	4103	4225	4261	3342

5.29. The flow profile shows that the A500 experiences greater flows in the early afternoon than in the morning peak hour (and that the early afternoon is almost as busy as the PM peak 17:00-18:00 assessed in the model). This early afternoon period coincides with the forecast development traffic peak period which the TA reports would be 13:00-14:00.

5.30. The NPPF requires that traffic impacts should be assessed 'at relevant times of the day' (NPPF Policy TR6). An assessment of the impact of development traffic during this early afternoon period would therefore be relevant, however no assessment of this period is included in the TA.

6.0 MICROSIMULATION MODELLING REVIEW

Scope and Status of the Model

6.1. The TA uses a Vissim microsimulation model to assess the proposed signalised site access and M6 Junction 16 (J16). The base model represents 2022 conditions and includes the M6 J16 circulatory and its approaches, sections of the M6 mainline, the A500, the B5078 and the services. It assesses 07:00-08:00, 08:00-09:00 and 17:00-18:00, with appropriate warm-up and cool-down periods outside the reported hours.

6.2. The Local Model Validation Report (Appendix K of the TA) states that the base model was calibrated against turning flows and validated against observed queues and journey times using September 2022 survey data. Results are averaged across ten runs using different random seeds. National Highways reviewed the base model and the TA states that it was agreed as a suitable basis for assessing the development. SCP has no reason to dispute its overall suitability; however, the reported vehicle speeds require clarification, as discussed below under 'Reported Network Impacts'.

6.3. However, the future scenarios are not based on an entirely unchanged base model. In preparing the future scenarios, in addition to adding the proposed access, conflict areas on the south-western part of the circulatory were replaced with priority rules because higher demand caused the model to temporarily lock-up, and signal timings were adjusted to optimise performance. These changes are explained in the SLR Modelling Report (Appendix L of the TA) and were applied to both future scenarios. The changes made to the base model coding appear reasonable, but the reporting provides limited detail of the amended parameters and timings. It would be reasonable to seek confirmation that the future-year model has been audited and accepted by the relevant highway authorities.

6.4. It is also noted that there is no evidence that Staffordshire Highways or Cheshire East Highways have agreed to the modelling and that this is a requirement of Policy AB2 in the adopted Newcastle-under-Lyme Local Plan 2020-2040:

"*A micro-simulation model should be prepared and agreed with National Highways, Staffordshire County Council and Cheshire East Council to identify mitigation measures required at planning application stage*."

Forecast Scenarios and Demand

6.5. The model tests a 2040 Reference Case and a 2040 Reference Case plus Development and mitigation. Background traffic was derived by applying TEMPro 8.1 factors of 1.136334 in the AM peak and 1.132662 in the PM peak to all light and heavy vehicle movements. Applying the same growth factor to light and heavy vehicles is conservative in one respect, as it is likely to produce higher background HGV growth than a freight specific forecast, for example using National Road Traffic Projections.

6.6. No specific committed developments or highway schemes are included. The 2040 reference case flows are therefore a 13% uplift of the 2022 surveyed flows, however as already highlighted in this report, DfT traffic count data shows that the A500 has already experienced an 11% growth in traffic between 2022 and 2025 and therefore it is likely that the 13% traffic growth assumption used in the modelling for 2040 is a significant underestimation.

6.7. Development demand comprises employment trips together with generated and pass-by trips associated with the lorry park. National Highways initially considered the trip generation and

distribution acceptable in principle, but identified unresolved matters that directly affect the model inputs. These include:

- differences between the development flows shown in the post-application flow diagrams and the Vissim matrices;
- changes to the PM peak trip generation;
- a change from the earlier gravity-model distribution; and
- the exclusion of development trips from the B5078.

6.8. SCP has not been provided with the Vissim matrices or the applicant's modelling audit response and therefore cannot independently reconcile these matters.

6.9. Until the model matrices are reconciled with the latest trip generation and distribution evidence, the reported model outputs cannot be treated as final. National Highways has stated that changes to the flows could alter the modelling results and, as at 8th June 2026, recommended that planning permission should not be granted for a further specified period and has not consented to a new access to the A500 trunk road at this time.

6.10. The submitted TA reports the 2040 assessment but does not present an opening-year assessment. National Highways has requested an opening-year assessment in accordance with DfT Circular 01/2022 and refers in its later correspondence to separate opening-year results which have not been included in the documents reviewed by SCP. National Highways identifies an increase in queueing on the M6 northbound on-slip in the Opening Year With Development scenario compared with the Opening Year Reference Case. Those results and the underlying technical note should be provided and reviewed alongside the application evidence.

Network Coverage and Sensitivity Testing

6.11. The geographical coverage is proportionate for assessing how the proposed access would interact with M6 J16 under normal peak-hour conditions however as noted previously, the model does not include the local road network beyond J16 for which no capacity modelling has been provided despite some notable levels of development trips being forecast in the TA.

6.12. In the 2040 AM Reference and Assessment Cases, queues at the B5078 and motorway services extend beyond the model boundary, preventing all forecast traffic from entering the network (known as latent demand). However, the proposed mitigation reduces this unmet demand, and queues reach the model boundary for only a short period between 08:10 and 08:20. SCP is therefore satisfied that extending the model to include these queues would be unlikely to materially change the results.

6.13. The model does not assess an incident or M6 diversion scenario. National Highways has repeatedly noted that J16 and the A500 form the main diversion route when the M6 is closed between Junctions 15 and 16. Although this is not a normal condition, the A500's diversion role and the scale and single access nature of the development justify either a sensitivity test or, at minimum, an agreed traffic management plan showing how the access would operate during foreseeable disruption.

6.14. A further sensitivity test should assess higher development vehicle demand. This is justified by the site's poor walking, cycling and public transport accessibility, uncertainty over the deliverability and cost of the proposed bus strategy, and the reliance on a 10% bus mode-share target. This would provide a clearer indication of the resilience of the proposed mitigation if the Travel Plan performs less successfully than assumed.

Reported Network Impacts

6.15. The relevant comparison is between the 2040 Reference Case and the 2040 Reference Case with the development and mitigation. Based on the reported averages, the mitigation appears to improve the overall performance of the network however there are notable impacts in some areas and no information is provided regarding the worst performing model runs and the effects of these on the network. In the AM peak:

- average network delay is broadly unchanged;
- overall delay including time outside the network reduces;
- latent demand falls from 146 to 28 vehicles between 07:00 and 08:00 and from 164 to 22 vehicles between 08:00 and 09:00; and
- queues on the motorway slip roads and B5078 are generally reduced.

6.16. In the PM peak, average delay increases by approximately two seconds per vehicle and there is no unmet demand reported.

6.17. These results show the combined effect of adding development traffic and the proposed highway works. The improvements result from the mitigation and show that these works are needed to offset the development's effects at J16. The mitigation should therefore be secured, completed and operating before the relevant development traffic is generated. Phasing and monitoring arrangements should be agreed with National Highways, Staffordshire County Council and Cheshire East Council.

6.18. Some substantial local effects remain. The model forecasts an A500 westbound queue of up to 500m at the new access during the AM peak, with journey times of up to 128 seconds along the reported westbound section to the access. The 500m maximum queue length from the proposed access stop line should be compared with the Reference Case maximum queue of 350m on the A500 westbound, measured from the existing stop line at the roundabout. The model therefore shows that the maximum length of queue on the A500 westbound increases significantly with the scheme in place, going from 350m back from the roundabout, to circa 780m back from the roundabout (noting that the proposed access stop line is 280m east of the existing stop line at the roundabout), or an increase of circa 430m (increase of 123%). This makes it more likely that the queue on the A500 westbound would extend back to the Alsager Road junction, where safety concerns have been identified, and more likely that drivers will rat run through local roads around Audley to avoid the queues on the A500 westbound, with potential highway capacity and safety effects as identified previously in this report.

6.19. Eastbound queues between the new access and M6 J16 are forecast to remain within the approximately 250m available, while the right-turn queue into the site is forecast to remain within its lane, albeit the reported maximum queue length is circa 100m and the right turn lane is 150m, leaving a relatively small margin for variation e.g. the 50m of reported spare capacity in the right turn lane would leave room for no more than two maximum length HGVs. If blocking back were to occur from the proposed access to the J16 roundabout, this would likely be a significant safety concern.

6.20. Whilst the reported queueing results do not appear to create a safety issue at these locations it should be noted that the TA reports only the maximum queue from each run averaged across ten runs. Averaging can hide the longest queue from an individual run, so the maximum across all ten runs should also be reported.

6.21. Appendix M and Table 9-5 within the TA report a journey time of 4,428 seconds in the 2040 Reference Case between 08:00 and 09:00 for segment 5-1 EB, which is the services egress to the B5078, reducing to 1,200 seconds with the development and mitigation. These figures are approximately 74

and 20 minutes respectively, which SCP considers an unacceptable and severe delay for users of this junction. Without viewing the model in operation, the cause of the excessive delay is unclear and the TA does not explain the result. It may be linked to queueing and unmet demand at or beyond the model boundary, but this should be confirmed and the reliability of the figure explained before conclusions are drawn from network wide averages. It should be investigated to establish whether further mitigation is needed at the services / B5078 junction.

6.22. Appendix M contains two further anomalies that require investigation. First, the reported average network speeds between 67.1 and 81.7mph appear implausibly high for a network containing a roundabout and signalised access. The model should be checked to ensure vehicle speeds are correct. Second, the final latent demand summary repeats the 08:00–09:00 AM values under the 17:00–18:00 PM heading, whereas Table 9-7 in the TA reports zero PM latent demand. Although this is likely to be a reporting error within the Appendix, it should be corrected and raises concerns regarding the quality assurance of the reported outputs.

Mitigation and Overall Findings

6.23. Subject to the outstanding issues, the proposed additional approach capacity and widening to the SW quadrant of the circulatory appears capable of materially improving the operation of M6 J16 compared with the unmitigated 2040 Reference Case. The latest general arrangement differs in minor respects from the modelled layout, including adjustment of the right-turn lane and addition of a pedestrian crossing on the M6 southbound exit. Appendix L explains why these changes were not expected to materially affect the results. This explanation is reasonable for the change to the right-turn lane. However, the signal operation and assumed pedestrian use of the crossing should be confirmed at the detailed design stage and included in any final model used to approve the works.

6.24. Policy AB2 of the adopted Newcastle-under-Lyme Local Plan states that a microsimulation model should be prepared and agreed with National Highways, Staffordshire County Council and Cheshire East Council, and requires the mitigation identified by that model to be implemented in consultation with those authorities. The reviewed information does not show that this requirement has been met. National Highways' latest consultation response leaves important model input and opening-year issues unresolved, while Staffordshire County Council has not yet responded. SCP therefore considers that the model provides useful evidence of a potentially effective mitigation scheme, but is not yet complete or agreed enough to conclude that the remaining cumulative impacts would not be severe.

6.25. Before the application is determined, the applicant should provide a consolidated and quality assured modelling submission that fully addresses National Highways' queries by:

- clarifying why the distribution differs to the previously provided gravity model;
- explaining the revised PM demand and exclusion of trips onto the B5078;
- reconciling the flow diagrams with the model matrices;
- confirming whether 2040 is the expected opening year and, if not, providing opening year results; and
- reporting and addressing the opening year northbound on-slip result.

6.26. SCP also recommends that the applicant provides:

- confirmation that the amended future year model has been audited and agreed;
- worst-case queue results across the model runs;

- an investigation of the exceptional segment 5-1 journey time and other output anomalies;
- an investigation of the high reported average speeds; and
- modelling that tests less successful sustainable-travel uptake and, in consultation with National Highways, scenario testing should there be an incident or closure of the M6 between J16 and 15.

7.0 SUMMARY

7.1. A summary of the findings of this report, highlighting areas of potential concern in relation to the highways work, and where further information is considered necessary, is provided as follows:

- SCP would recommend that both a stage 1 Road Safety Audit and a Walking, Cycling & Horse-Riding Assessment and Review should be provided by the applicant at the planning application stage and these would normally form part of the TA.

- Given that the A500 serves as a designated diversion route to accommodate traffic from the M6 in emergency situations, there could be an argument that these diversion scenarios are 'reasonable future scenarios' and should be assessed as part of the application. The latest consultation response from National Highways includes this point.

- There is no confirmation within the TA or TTN that the emergency services have been consulted on the proposed emergency access route. It should be demonstrated through swept path analysis that emergency vehicles can access the full length of the emergency route via Barthomley Road satisfactorily. Sections of Barthomley Road are below the 3.7m minimum recommended width for emergency vehicle access.

- Barthomley Road could effectively become blocked by general traffic during an emergency scenario, preventing satisfactory access to the site for the emergency services. Barthomley Road is known to serve as an alternative route for traffic avoiding congestion on the A500 and this is therefore a foreseeable scenario that SCP consider should be taken into consideration by the emergency services. The route can also be temporarily blocked by farm animals crossing from one field to another, which is another risk that should be considered by the emergency services.

- The site is effectively inaccessible for pedestrians and cyclists which could be considered contrary to the aims of the National Planning Policy Framework.

- No detail is provided in the TTN regarding the proposed route/routes of a dedicated bus service for the site. It would be expected that the proposed routeing of the bus service would form part of the public transport strategy at this stage, to enable the feasibility of the proposal to be fully considered.

- SCP consider that there is a particular accident cluster around the Alsager Road / A500 westbound off and on slips, based on the accident data. This accident blackspot could experience a significant increase in conflicting vehicle manoeuvres as a result of development. SCP consider that this issue hasn't been fully assessed within the TA and no mitigation is proposed at this location to address the potential impact.

- The proposed mitigation works at the J16 roundabout include new footway and controlled pedestrian crossing of the M6 southbound on-slip and M6 northbound off-slip. These crossings do not provide for safe pedestrian access between the site and the services to the north-west of the roundabout, which are likely to be the main destination for any pedestrian trips generated by the development in this area. This is a safety concern.

- It would not be unreasonable to expect that the traffic assessments undertaken would have included a sensitivity test scenario that uses higher vehicle trip rates to reflect the poor sustainable accessibility of the site (and to reflect a minimum bus mode share of 5% which is what the proposed S106 contribution is based on), to allow an understanding of how a less optimistic sustainable accessibility scenario would affect the network.

- The trip distribution and assignment exercise presented in the TA predicts very low levels of development traffic routeing through Audley. It is known however that roads within the village are used by general traffic avoiding the A500 when it experiences congestion issues. These rat run routes are unsuitable for accommodating significant traffic flows, for example passing through residential areas and along narrow rural lanes.

- The traffic model shows that the maximum length of queue on the A500 westbound increases significantly with the scheme in place, more than doubling. This makes it more likely that the queue on the A500 westbound would extend back to the Alsager Road junction, where safety concerns have been identified, and more likely that drivers will rat run through local roads around Audley to avoid the queues on the A500 westbound, with potential highway capacity and safety effects that haven't been considered in the TA.

- SCP consider that the TA does not fully assess the likely traffic impacts of development on the local highway network and does not provide sufficient evidence that there would be no severe impact upon the local highway network.

- DfT traffic count data shows that the A500 has experienced significant traffic growth since the surveys undertaken in 2022 and observed queue lengths on the A500 westbound are now significantly greater than recorded in the 2022 surveys, supporting this data. The DfT data shows that the A500 has experienced 11% traffic growth between 2022 and 2025. This level of growth is not reflected in the future year traffic modelling upon which the assessment of the proposed development scheme has been based (which assumes 13% traffic growth by 2040). The future year assessment model is therefore likely to significantly underestimate the baseline traffic flows on the network particularly on the A500 East arm which is of critical importance given that the proposed development access is to be located here. This raises significant doubts regarding the reliability of the model results for making judgements about the scheme impact.

- The NPPF requires that traffic impacts should be assessed 'at relevant times of the day' (NPPF Policy TR6). An assessment of the impact of development traffic during the early afternoon period would be relevant as DfT traffic data shows that flows on the A500 are high during the early afternoon when the development traffic would peak, however no assessment of this period is included in the TA.

- Following a review of the Vissim modelling outputs, SCP recommend that before the application is determined, the applicant should provide a consolidated and quality assured modelling submission that fully addresses National Highways' queries by:
  - clarifying why the distribution differs to the previously provided gravity model;
  - explaining the revised PM demand and exclusion of trips onto the B5078;
  - reconciling the flow diagrams with the model matrices;
  - confirming whether 2040 is the expected opening year and, if not, providing opening year results; and
  - reporting and addressing the opening year northbound on-slip result.

- SCP also recommends that the applicant provides:
  - confirmation that the amended future year model has been audited and agreed;
  - worst-case queue results across the model runs;
  - an investigation of the exceptional segment 5-1 journey time and other output anomalies;
  - an investigation of the high reported average speeds;
  - future year modelling that accounts for revised levels of background traffic growth, reflective of the high rates of growth experienced on the network since the 2022 surveys; and
  - modelling that tests less successful sustainable-travel uptake and, in consultation with National Highways, scenario testing should there be an incident or closure of the M6 between J16 and 15.
- There is no evidence that Staffordshire Highways or Cheshire East Highways have agreed to the modelling and this is a requirement of Policy AB2 in the adopted Newcastle-under-Lyme Local Plan 2020-2040.

7.2. On the basis of this review, SCP considers that there are valid highways grounds for an objection to the planning application.