

M3 Junction 9 Improvement Project
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[REDACTED]
Comments on D4 and D5 rebuttals by Applicant

Note: **Emboldening** of text in quotation is my emphasis.

D4 Rebuttals (REP5-030)

WinFoE evidence/question		Applicant Rebuttal	Winchester FoE comment
Document			
REP4-052 1	<p><i>Question WinFoE (to NH): For the streets detailed in the validation of the Winchester network, what survey data has been collected over what period of time?</i></p> <ul style="list-style-type: none"> ▪ <i>Can we please see this data?</i> ▪ <i>And could the Applicant please show its reasoning for giving statistical significance to its assertions of benefits on the streets of Winchester?</i> 	<p>Please refer to Item 3(i) third bullet within the Applicant Written Summaries of Oral Case of Issue Specific Hearing 2 (ISH2) (REP4-035) relating to the observed traffic flow and journey time data and equivalent modelled data used in the calibration and validation of the M3 Junction 9 Strategic model.</p> <p>The Applicant has provided the requested survey data at Appendix C to this document.</p> <p>The Applicant considers that the Scheme transport assessment is valid where this is based on transport models developed in accordance with Department for Transport guidance. As summarised in Section 3.5 of the Combined Modelling and Appraisal Report (7.10, Rev 1) the M3 Junction 9</p>	<p>There is no traffic survey data in Appendix C. It only says where traffic counts were made – it does not provide the counts I requested.</p> <p>The whole point of the request was to obtain further statistical data on the variance of the data being presented to supposedly demonstrate DS-DM significance for the modelling of Winchester’s street network. I have already demonstrated (AS-010) that the model fit to the one-off observed data in the traffic validation exercise had a variance of SD26%, and I made some estimates based on proxy (parking and pollution) data, that the variance of observable data might be anywhere from 33%-60%. The data request at REP4-052 was to find out what was the variance of the measured data the Applicant was claiming to use. The Applicant has failed to provide this, despite asserting that it had such data (REP4-035 item 3(i) p17). One can only conclude that the DS-DM differences used to claim pollution benefit and its economic quantification have not been plausibly demonstrated to be statistically significant. The Applicant fails to give any reasoning for its assertions of significance.</p>

		Model met the Department for Transport's (DfT) Transport Analysis Guidance criteria for the calibration and validation of transport models. This included traffic flow screenlines and journey time routes across Winchester.	Again we have the Applicant's hand-waving assertion that because they have followed guidance and inserted data (we haven't seen) into a black box (we don't know the contents of) and got an output (of which they are only prepared to show us the part they want us to see) that their conclusions are valid. This is statistical innumeracy.
REP4-052 2	<p><i>Questions WinFoE6 (to NH): What are the differences between the Fixed Trip matrix and the VDEM matrix?</i></p> <ul style="list-style-type: none"> ▪ <i>What does the VDEM model say about the level of induced traffic (e.g. south of the junction)?</i> ▪ <i>What part of the user benefits is attributable to the induced traffic?</i> 	Please refer to Item 3(i) first bullet within the Applicant Written Summaries of Oral Case of Issue Specific Hearing 2 (ISH2) (8.14, REP4-035), which noted there is a limited impact of induced demand.	<p>In asserting little induced demand, I believe that the Applicant is hiding behind a technical punctilio. I don't know what the VDEM is really doing, since the Applicant has declined to answer the first part of this question.</p> <p>What is happening with the induced traffic argument is that DM already effectively contains traffic levels that could not be reached without this scheme in place (and certainly not those posited for the streets of Winchester). Whether you call that de-suppressed traffic or induced traffic is an academic nicety. I addressed this in REP5-038 (3i third bullet) and also discussed at the head of my submission (REP6- 037) on the responses to ExA Q2.</p>
REP4-052 3	<p><i>Question WinFoE7 (to NH): Does the VDEM modelling include modal choice?</i></p> <p><i>Question WinFoE10 (to NH): What modal shift results from the scheme according to the VDEM model?:</i></p> <ul style="list-style-type: none"> ▪ <i>From public transport to private motoring?</i> ▪ <i>From rail freight to road freight?</i> 	<p>Mode shift between private car and public transport is modelled within the variable demand model as described in Section 3.6 of the Combined Modelling and Appraisal Report (7.10, Rev 1).</p> <p>Mode shift between private car and public transport is modelled within the variable demand model which is described in Section 3.6 of the Combined Modelling and Appraisal Report (7.10, Rev 1). Please refer to Item 3(i) third bullet within the Applicant Written Summaries of Oral Case of Issue Specific Hearing 2 (ISH2) (8.14, REP4-035), which notes there is very little predicted change in overall travel demand indicating that mode shift impacts are also slight.</p> <p>As noted in Item 3(i) second bullet within the Applicant Written Summaries of Oral Case of Issue Specific Hearing 2 (ISH2) (8.14, REP4-035) there is no modelling of rail freight and modal shift for freight between road and rail and the strategic model makes use of the Department for Transport regional Road Traffic Forecasts for goods transport.</p>	<p>It is probably too late now to pursue this further. It would have been instructive to learn precisely what modal shift would be expected. The Applicant dismisses this because it persists in the implausible claim that there is no change in travel demand from this scheme. If VDEM does not show such changes then there has to be something wrong with the assumptions (as discussed elsewhere and much evidenced – see https://tapas.network/35/hopkinsongoodwin.php) probably in the assumption that forecast DM would not be suppressed on parts of the network.</p> <p>The Applicant must have estimated modal transfer before doing its CDEM modelling, not deduced it as a result of the modelling. In TAG M2.1 §2.3.9 it says: <i>Test 2 - If the scheme is highway only, does the application of the mode shift test suggest that there will be a significant impact on public transport demand? If YES, a mode choice model</i></p>

			<p><i>will, in principle, be required.</i></p> <p>Presumably, since the Applicant says they are modelling modal shift, this test will have been carried out. The Applicant should therefore be able to say what movement away from public transport is anticipated with this scheme.</p>
REP4-052 4	<p><i>Question WinFoE9 (to NH): What are the main differences between the pre-SMART decision modelling outputs and the post-SMART outputs?</i></p> <ul style="list-style-type: none"> ▪ Does post-SMART modelling result in significant congestion south of J9 during the scheme lifetime? ▪ Does post-SMART modelling change the additional traffic predicted through Twyford? 	<p>This is not relevant where the Scheme has been assessed using Do Minimum forecast scenarios, which include future highways schemes determined using the Uncertainty Log with Near Certain and More than Likely schemes included in the Core scenario. This is described in Section 4.2 and Section 4.3 of the Combined Modelling and Appraisal Report (7.10, Rev 1).</p>	<p>I do not understand what point is being made here. Section 4.3 is about sensitivity tests. Table 4-4 in section 4.3 does not list M3 Smart. What does that signify. Does the modelling used in this inquiry include the assumption that M3 Smart would be completed by the first scheme year (or even already)? If so its capacity has now been reduced. Is the Applicant really saying this has zero effect on its modelling?</p>
REP4-052 5	<p><i>Question WinFoE11 (to NH): Could we please be sent the following files:</i></p> <ul style="list-style-type: none"> ▪ The COBA output file? ▪ The link-node diagrams for the COBA analysis? ▪ The GHG modelling output file? ▪ The air quality modelling output files? 	<p>The Applicant notes that the requested files rely on the use of specialist proprietary software to access the data (such as SATURN, DIADEM, TUBA, WITA) and this also requires training and experience in the software and related assessment methodologies to process and analyse the outputs. Furthermore, the data outputs and related assessments are already presented within a summarised version in the Combined Modelling and Appraisal Report (7.10, Rev 1) and the Transport Assessment Report (7.13, Rev 1).</p> <p>The Applicant considers that it is not proportionate to collate and package this data, plus required supporting documentation, given the extent of material already contained within the Combined Modelling and Appraisal Report 7.10, Rev 1) and the Transport Assessment Report (7.13, Rev 1) including the supporting appendices.</p>	<p>This is a preposterous, unfair and arrogant position for the Applicant to take. All along the Applicant has refused to give any real evidence of almost anything it does. It simply tells us what it chooses to select from the outputs of its black boxes and we are apparently now required to accept its word on everything – ‘trust us we are the experts’.</p> <p>The offensive assertion that interested parties would need to be trained to understand the processes is pure priestcraft. They are arcana in the Holy of Holies and the ordinary people should not expect to see them. The position is nonsensical. Years ago, when I attended many road inquiries, where there was time and real opportunity to examine what the Applicants were doing, I would routinely examine the COBA printouts and, as a result, could draw attention to many incongruities of the cases made.</p> <p>There is nothing ‘proportionate’ in withholding relevant data from the Inquiry or Interested Parties. It is simply unjust and we will make a formal complaint on this matter.</p>
REP4-052 6	<p><i>Question WinFoE12: Are GHG emission costs discounted back to</i></p>	<p>GHG emissions monetised impacts have been discounted in accordance with Department for Transport, Transport Analysis Guidance (TAG) as</p>	<p>It would have been nice if the Applicant had bothered to answer the question, rather than me having to go and find</p>

	<i>base year in the normal manner of discounting costs? If so, what is the rationale for doing so, since emission is cumulative and all emissions count equally to the future?</i>	described in Section 5.5 of the Combined Modelling and Appraisal Report (7.10, Rev 1).	<p>the answer. TAG A3 at §4.2.22:</p> <p><i>The value per tonne of CO₂e emissions, which varies for each year, should be applied to the difference in emissions in each year. This should then be discounted at standard HM Treasury rates (see TAG Data Book Table A1.1.1) and summated to give the NPV of the change in non-traded sector fuel consumption related CO₂e emissions over the appraisal period.</i></p> <p>The normal and reasonable argument for the discounting process is the reverse of the compound interest principle. While it might seem reasonable to have a principle that all future costs in money terms should be treated in the same way, it is not a sane principle here. Money spent 50 years in the future may not seem important to our economic way of thinking and can thus be discounted. But carbon emitted in the future is as important as carbon emitted today to our legitimate concern for our descendants and the future of the planet.</p>
REP4-055 1	<p><i>Summary</i></p> <p><i>The DMRB, on which the Applicant relies, suggests there is no need to model PM_{2.5} at all and that PM₁₀ modelling can be used as a proxy. There is no evidence in literature that this is a reasonable position and the poor correlation between the two measures in Winchester demonstrates this. Nor is the DMRB's assumption that such pollution can only get better valid since it does not take into account the likely increases in such pollution as a result of the move towards EVs.</i></p>	<p>The Applicant has undertaken assessment of PM_{2.5} in accordance with DMRB LA 105 Air Quality (Highways England, 2019) and predicted concentrations at representative receptors presented in Appendix 5.2 (Human Receptors Backgrounds and Operational Phase Results) of the Environmental Statement (ES) (6.3, APP-086). These results apply background PM_{2.5} concentration (from Defra modelling datasets) and the modelled PM₁₀ concentration from the road network. PM_{2.5} (particulate matter with an aerodynamic diameter <2.5µm) is by definition a subset of PM₁₀ (particulate matter with an aerodynamic diameter <10µm) and therefore assuming all PM₁₀ is PM_{2.5} it is inherently a precautionary approach and an acceptable proxy.</p> <p>The particulate emission rates applied in Chapter 5 (Air Quality) of the Environmental Statement (ES) (6.1, Rev 2) are derived from the Defra 'Emission Factor Toolkit' (EFT) which calculates particulate emissions associated with exhaust pipe emissions, brake wear, tyre wear and road abrasion. Whilst the exhaust pipe emissions reduce over time, post 2020 there is predicted to be no significant reduction (less than 10% from 2020 – 2030) in particulate emissions rates from traffic (per vehicle-km) within the EFT or calculations applied within Chapter 5 (Air Quality) of the Environmental Statement (ES) (6.1, Rev 2) as they are dominated by non-exhaust emissions.</p> <p>Whilst the weight of electric vehicles (EVs) may be heavier (although this</p>	<p>Pointing out that PM_{2.5} is a subset of PM₁₀ is a pointless remark. What has it got to do with the point I make that PM₁₀ is not a good proxy for PM_{2.5} in modelling? If I say that fruit consists of apples and oranges, is the Applicant saying I can have a model for apples that uses fruit as a proxy? Saharan sand drift significantly affects PM₁₀, but does not affect PM_{2.5} in the same way, either in quantity or harmful chemical (carcinogenic, neuropathological, immuno-compromising, endocrine-disruptive and genotoxic) effects.</p> <p>I am grateful for the Applicant providing a reference to more research from my alma mater, Imperial College. It does not appear to say anything in support of the Applicant's position against mine. Of course brake wear is reduced by regenerative braking – I said so in my submission. The new IC paper does not offer any data or opinion on whether the central point I made, about tyre wear emissions growing with vehicle weight. What it concludes is:</p>

		<p>varies widely between vehicle), this does not necessarily mean greater particulate emissions due to the use of regenerative braking and specific tyres. Indeed, research by Imperial College London in on brake wear particulate matter emissions indicates that regenerative braking on EVs could result in overall reductions in particulate emissions from brake wear, although tyre wear and road abrasion contributions are more directly influenced by vehicle weight (and speed and driving behaviour). Please see Appendix A (Quantifying the change of brake wear particulate matter emissions through powertrain electrification in passenger vehicles – Environmental Research Group, Imperial College London 2023) for the full research paper. Whilst the overall net effect is uncertain, as recognised by the UK Government’s Air Quality Expert Group (AQEG) 2019 report on Non-Exhaust Emissions from Road Traffic, the assessment undertaken does not assume ongoing reductions in emissions (per vehicle km). Please see Appendix B (Non-Exhaust Emissions from Road Traffic – Air Quality Expert Group 2019) for the full Air Quality Expert Group report.</p>	<p><i>While our analysis supports the transition towards electric and hybrid vehicle fleets as a means of reducing brake wear emissions, it is essential to also consider other wear-related emissions from tyres, road surfaces, and resuspension of road dust, as these sources could potentially increase due to vehicle mass.</i></p> <p>As admitted by the Applicant, the (earlier) AQEG report does recognise that the overall Non-Exhaust-Emissions effect of increasing EV levels is uncertain, so I don’t see that this adds anything very much. Except that, interestingly, the report states:</p> <p><i>The most effective strategies to reduce NEE relate to traffic management: reduce the overall volume of traffic; lower the speed where traffic is free-flowing (such as trunk roads and motorways); and promote driving behaviour that reduces braking and high-speed cornering.</i></p> <p>Which confirms a point I made earlier (and echoed by the City Council) in respect to road surface wear, that emissions could be reduced by lowering speed limits in the vicinity of a large receptor population like Winchester.</p> <p>So the reports offered by the Applicant do not rebut anything I have said on the likelihood of increasing emissions with growing EV content in the traffic mix. On the other hand I made reference to a recent report by Emission Analytics, who do real-world driving pollution analysis:</p> <p><i>The headline conclusion we draw now is that, comparing real-world tailpipe particulate mass emissions to tire wear emissions, both in ‘normal’ driving, the latter is actually around 1,850 times greater than the former. Yes, in normal driving the ratio is almost double the previous figure for aggressive driving.</i></p> <p><i>Quoting such ratios, however, needs careful interpretation. The fundamental trends that drive this ratio are: tailpipe particulate emissions are much lower on new cars, and tire wear emissions</i></p>
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REP4-055 2	<i>Air pollution monetarised</i>	The monetisation of predicted changes in air pollution resulting from the Scheme was undertaken as detailed in response to ExQ2 16.2.7 within the Applicant Response to the Examining Authority's Second Written Questions (ExQ2) (Document Reference 8.17).	This still does not counter my contention that this monetarisation relies on a DS-DM traffic difference on the streets of Winchester for which the Applicant can show no statistical evidence of credibility.
REP4-055 3	<p><i>Particulates and road surface: I pointed out, in relation to the use of noise reduction surfaces, that there could be a particulate pollution consequence of this. Mr Branchflower said he was unaware of this. The subject is discussed within the Imperial College paper cited above, specifically referring to:</i></p> <p><i>The contact interaction between the tyre and the road is governed by factors such as vehicle weight, tyre material, driving style and road conditions and the type of wear particle generated depends on a combination of these factors. For example, tyres in contact with smooth roads will produce a greater amount of micro-wear particles and tyres driven on rough surfaces will result in larger abraded particles.</i></p> <p><i>I was not arguing for not having noise-reduction surfaces, merely pointing out that if they lead to a particulate distribution that biases towards the more harmful PM2.5 (or even the PM0.1 to which Mr. Tidridge referred) one needs to consider that. If</i></p>	<p>Road surface characteristics will influence particulate emissions from traffic associated with road abrasion and tyre wear, alongside driver behaviour (i.e. acceleration and braking) and speed.</p> <p>The paper in Appendix A (Quantifying the change of brake wear particulate matter emissions through powertrain electrification in passenger vehicles - Environmental Research Group, Imperial College London 2023) proposes that tyre wear from a smoother road surface (as associated with a low road noise surface) is likely to produce a greater proportion of micro-wear (i.e. smaller) particle size than a rough surface which will produce larger abraded particles.</p> <p>This is considered to be a reasonable hypothesis. However, there is no consideration given to the relative magnitude of tyre wear particulate emissions from a smooth or rough surface, or to the magnitude (or particle size) of particulate emissions resulting from road abrasion. The UK Government's Air Quality Expert Group (AQEG) 2019 report on Non-Exhaust Emissions from Road Traffic clarifies that 'rougher' road surfaces would lead to a greater overall release of particulates from both tyre wear and road abrasion due to the higher rolling resistance:</p> <p>'The friction of a vehicle against the road is important for both tyre wear and resuspension of particles from the road surface. The frictional force at the surface = $Cr.M.g$, where M is the vehicle mass, Cr the coefficient of rolling resistance, and g the gravitational acceleration constant. Values of Cr depend on the surface but tend to be higher for 'rougher' surfaces. (AQEG, 2019).'</p> <p>Accordingly, the Applicant's position remains that the applied particulate emission rates in Chapter 5 (Air Quality) of the Environmental Statement (ES) (6.1, Rev 2) represent the best available data and is not aware of any data which indicates they are invalidated by the use of low road noise</p>	<p>As a physicist I don't think I needed a lecture on coefficients of friction. Nobody is disputing that rough surfaces would produce more particulates. That wasn't the point I was making. I can't actually find the quotation on particle size within the Appendix A. The definite citation I gave, to a different IC paper, did not talk about greater proportion of micro-wear, but greater amount.</p> <p>I was not suggesting that one did not use smooth surfaces for paving, but that there was a health consequence of doing so, and suggested it might be mitigated with lowering speeds where there were important numbers of receptors.</p>

	<i>it is an important factor, there are other ways of reducing both noise and pollution, notably speed reduction.</i>	surfacing.	

D5 Rebuttals (REP6-024)

REP5-038 1	<p><i>Item 3 (i) first bullet</i></p> <p><i>I am not clear what the NH argument is here. My observation was that there is a standard deviation of observation and there is a standard deviation of model-observation fits. Those standard deviations need to be added in the normal statistical way (2(12+22)) in order to get a variance against which DS-DM differences can be assessed as statistically significant. I indicated that there was a high variance (12) for the model-average-observation fit, which already put in question the significance of any assertion about benefits on the streets of Winchester. NH have not provided here a measure of the additional variance of observations (22). There remains no reason to give credibility to the assertions about benefits to the streets of Winchester and certainly no reason for the positive AQ benefit within the economic case.</i></p> <p><i>Pre-Covid analysis and limited post-Covid analysis merely signifies an additional uncertainty variance to the above. The reference is to three sensitivity tests, which all refer to the main corridor movements. This says nothing about the usefulness of the traffic model in making assertions about benefits or otherwise to the streets of Winchester.</i></p>	<p>The Applicant has provided further information in relation to observed data used in the calibration and validation of the model in Applicant Comments on Deadline 4 Submissions (Appendix C - Stage 3 Transport Data Package Report) (8.20, REP5-030). A wide range of observed data was collected and collated for model development including such data as traffic counts and journey times. The observed data was collected in accordance with Department for Transport (DfT) Transport Appraisal Guidance (TAG) unit M1-2 (Data Sources and Surveys), taking cognisance of time series data, in neutral months and avoiding abnormal traffic periods (weekends, holidays etc) to be representative of typical or representative data. The observed data was then used in the development of the model to inform calibration and demonstrate validation. The resulting comparisons of observed vs modelled data were then undertaken in accordance with DfT TAG unit M3-1 (Highway Assignment Modelling). The resulting base year model was then used as the basis to prepare Do Minimum and Do Something forecasts in accordance with DfT TAG unit M4 (Forecasting and Uncertainty). The Do Minimum and Do Something models are then compared against each other to quantify the impacts of the Scheme against a range of criteria (flows, journey times, delays etc).</p>	<p>This simply repeats the response to all attempts to actually get the Applicant to engage with the statistical significance of the DS-DM data on the streets of Winchester See response to REP4-052:1 above</p>
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<p>REP5-038 2</p>	<p><i>Item 3(i) – third bullet</i> <i>The induced traffic argument of the Applicant is baffling and contrary to all known evidence (including especially SACTRA) on the subject. Essentially it has to be recognised that claims of journey time improvements and congestion relief must map to journey induction. If it does not then there is something essentially wrong, by definition, with the computation. I was wrong to assert that the VDEM model should demonstrate the level of induction, not because the variable demand trip matrix ought to arise out of the elementary considerations of the shift in the demand-supply curve, but because the VDEM model is clearly not measuring this shift in any sensible way. The warning sign is that the Appendix B data seems to show additional trips from the VDEM data even in Do-Minimum, and that these trips are much the same as those in the Do-Something. This is ludicrous. So what is happening here?</i> <i>Having since consulted the literature, I see that the problem arises (though it shouldn't do, if the Applicant or TAG is doing the right modelling) from the future baseline traffic assumed in the model. What the baseline traffic signifies, is that a predicted level of traffic occurs such that the network as a whole cannot accommodate it. By then doing a variable demand matrix calculation one is measuring the ability of a super-congested network to support additional trips. In fact, those trips can only occur because the scheme allows them to occur. Induced traffic is hidden within the forecast traffic increases, which largely could only occur with the building of a scheme. The induced traffic merely</i></p>	<p>SACTRA 1994 and more recently DfT's 'Latest Evidence on Induced Travel Demand: An Evidence Review' recognise that induced traffic does exist, though its size and significance is likely to vary in different circumstances. The Variable Demand Model (VDM) used in the appraisal of the Scheme is capable of quantifying the possibility of induced traffic as a consequence of a scheme. The Scheme is not a road widening scheme, it is a junction improvement scheme. The information provided by in Appendix B of the Combined Modelling and Appraisal Report (7.10, Rev 1) demonstrates that the differences between the Do Minimum and DO Something do show additional trips, but they are in effect negligible as they represent less than 0.01% change. The overall level of travel demand changes over time (between 2027, 2043 and 2047) as demonstrated in Appendix B of the Combined Modelling and Appraisal Report (7.10, Rev 1) as a consequence of predicted changes in travel demand. This is calculated from a combination of data including DfT projections and Local Authority Planning data. The travel demand for each individual forecast year is consistent for both the Do Minimum and Do Something.</p>	<p>See response to REP4-052:2 above</p>
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	<p><i>figures as traffic, re-assigned from a trip matrix unrealisable without the scheme. If VDEM cannot show such manifest induction as induction, then there is something wrong with the modelling.</i></p> <p><i>The way that NH used to look at traffic in their post opening project evaluation (POPE) reports was to compare forecast traffic levels with actual outturn traffic levels. Because the forecasts were invariably overestimates, that meant the outturn traffic levels often appeared to be in line with the forecasts, and they could conclude there was little induced traffic.</i></p> <p><i>This distortion was analysed in the 2017 CPRE report (The Impact of Road Projects in England; Sloman et al) that compared the outturn traffic with background traffic trends at local, regional and sometimes national level. This showed that the growth in traffic levels associated with the scheme were often much higher than the growth in background levels. NH changed their methodology in response to that report and now the post 2018 POPE reports compare outturn traffic with background traffic.</i></p> <p><i>The Lisa Hopkinson/Phil Goodwin submission to the consultation on NNNPS, showed that the POPE reports continue to show evidence of much higher traffic than background traffic growth.</i></p> <p><i>[by the way: the baseline assumptions of general traffic growth across the network, lead to some of the erroneous assumptions of benefit in the Winchester street network. All of the future modelled DM flows for Winchester's streets are above current levels, even though some roads (e.g.</i></p>		
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	<i>Andover Road AM) are already at a standstill at peak hours – the DM-DS difference is thus meaningless]</i>		
REP5-038 3	<i>Item 3 (ii) We make comments on this in our response (a separate D5 submission) to the rebuttal of our D3 submission. NH (or TAG) have never demonstrated that there is an overall accident benefit from their mode of calculation. No attempt has been made to examine how accident rates on the rest of the network (especially in the near vicinity of a junction with a new scheme) are affected by the introduction of a new road scheme. Statistical correlations do not support the contention that overall road safety improves with road building.</i>	The Applicant has provided a further response regarding accident benefits within ExQ3 16.3.1 in the Applicant's Response to Examining Authority's Third Written Questions (ExQ3) (Document Reference 8.22).	I will respond to this in a later submission (D8). But the Applicant's response in the ExQ3 does not address the central point I keep making about modelling safety benefits and which the Applicant keeps ignoring.
REP5-038 4	<i>Item 6 (i) – second bullet We have already pointed out that the modelling of Winchester streets is subject to so much error that any of the results claiming a DS-DM benefit can have no statistical significance. The 17,11,6 statement is a very curious way of looking at data – what point is being made? That 6 is less than 11? How does that map on to any measure of harm?</i>	PM2.5 is included within the cost-benefit calculation as explained in the Applicant's response to ExQ2 16.2.7 within the Applicant Response to the Examining Authority's Second Written Questions (ExQ2) (8.17, REP5-026). The Scheme is predicted to lead to a decrease in population exposure to PM2.5 within the Study Area due to the predicted decrease in traffic through the more populated area of Winchester City centre. The electrification of vehicles will result in elimination of exhaust related particulate emission and whilst the weight of electric vehicles (EVs) may be heavier, this does not necessarily mean greater particulate emissions due to the use of regenerative braking and specific tyres. Research by Imperial College London in on brake wear particulate matter emissions indicates that regenerative braking on EVs could result in overall reductions in particulate emissions from brake wear, although tyre wear and road abrasion contributions are more directly influenced by vehicle weight (and speed and driving behaviour). Please see Appendix A (Quantifying the change of brake wear particulate matter emissions through powertrain electrification in passenger vehicles – Environmental Research Group, Imperial College London 2023) of Applicant Comments on Deadline 4 Submissions (8.18, REP5-030) for the full research paper. Applicant Response Please also refer to Section 2.15 (Winchester Friends of the Earth – Post hearings submissions including written summaries of oral cases 4) of Applicant Comments on Deadline 4 Submissions (8.20, REP5-030).	See response to REP4-055:1 above
REP5-038 4	<i>Item 6 (i) – third bullet The Applicant persists in not recognising that an overloaded</i>	The assessment of potential effects from nitrogen deposition to designated sites, including those containing chalk grassland, is set out in Appendix 8.3 (Assessment of Operational Air Quality Impacts on Biodiversity) of the ES	This is just repeating the same nonsense, that no amount of straws will break the camel's back. Natural England

	<p><i>habitat should not get additional load, however small.</i></p> <p><i>The assertion that the levels are below the levels at which species diversity might occur, is not credibly backed up in the Appendix 8.3. How is it appropriate to assume that chalk grassland has the same species response to nitrogen as heathland, when NE are already concerned about invasive species on St Catherine's Hill?</i></p> <p><i>When a site is getting on for 3 times overloaded, that means something presumably – why would the biodiversity experts talk about these maximum loading factors if they have no meaning for species diversity?</i></p>	<p>(6.3, Rev 1).</p> <p>The assessment of potential operational effects on designated habitats from vehicle exhaust emissions has been undertaken with regard to standard industry guidance, including: Design Manual for Roads and Bridges (DMRB) LA105 Air Quality (Highways England, 2019) with particular reference to Figure 2.98 Assessment of significant effects on designated sites (see Plate 1 below) NEA001 Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (Natural England, June 2018)</p> <p>Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. (Natural England Commissioned Reports, Number 210)</p> <p>☑ Advice on Ecological Assessment of Air Quality Impacts (Chartered Institute of Ecology and Environmental Management, 2021)</p> <p>☑ A guide to the assessment of air quality impacts on designated nature conservation sites – version 1.0 (Holman et al., 2020) (referred to as the Institute of Air Quality Management or 'IAQM guidance' within this technical note)</p> <p>The assessment confirms that many sites currently receive high background levels of nitrogen deposition. The assessment also shows that, whilst there will be some small increases in nitrogen deposition from the Scheme, these are small, and typically most noticeable at the road edge. They are also below the level at which a theoretical reduction in species diversity might occur. For these reasons effects from changes in traffic emissions from the Scheme will be not significant. Accordingly, as effects to the sites assessed are not significant, no specific mitigation is required or provided. However, the provision by the Scheme of over 9ha of new chalk grassland to the east of the M3 within South Downs National Park will both increase the quantum of this resource in the local area and provide benefits to existing areas of chalk grassland through linking habitats.</p>	<p>have pointed out that the chalk grassland is already suffering from nitrogen with reduced species count.</p>
REP5-038 4	<p><i>Submission re 7.10 Modelling and Appraisal Report</i></p>	<p>The Applicant notes that there are comments in relation to the merits of Department of Transport's modelling Transport Analysis Guidance (TAG) and national traffic forecasts, and therefore has no further comments.</p>	<p>There are some crossed wires here. I don't know to what submission this refers. In my REP5-038 under item 7(i) I have comments on road wear (as per REP4-055:3 above.</p>
REP5-039 1	<p><i>Item 2(i) - fourth bullet</i></p> <p><i>No new evidence has been brought to show any credibility for the wider economic benefits of this scheme (see my comments on the Applicant's rebuttal of my D3 submission). There is no plausible narrative to justify agglomeration benefits or that the</i></p>	<p>The Applicant has undertaken the assessment of the agglomeration benefits in accordance with Department for Transport's Transport Analysis Guidance (TAG). Paragraph 5.7.12 of the Combined Modelling and Appraisal Report (7.10, Rev 1), notes: "A proportionate approach was taken in quantifying the agglomeration benefits based on consideration of the underlying transport model features and available data. This was based on considerations explained in the Economics Appraisal Package, TAG Unit A2.4 guidance (specifically Appendix C), and liaison with the WITA software</p>	<p>Another load of hand-waving. The black box approach requires a considered economic narrative before even attempting this sort of calculation. The Applicant has done of this. It can't just invent stuff out of thin air and then quantify it. The applicant has still said absolutely nothing about displacement risks or how agglomeration somehow does not generate traffic (a generation it denies). This is</p>

	<p><i>assumed benefits are not displaced from elsewhere (perhaps contrary to the levelling up agenda) or that these benefits, if they exist, are not double counted (i.e are separate from the user benefits which are deemed to result from congestion removal). I have responded to this in my CD5 submission: Comments on 8.16 Applicant Comments on Deadline 3 Submissions</i></p>	<p>developers. The geographic focus of the agglomeration calculations reflects where Winchester is one of the primary employment locations in the Enterprise M3 area and the Scheme is expected to boost productivity by removing congestion “ Agglomeration benefits were therefore focused to and from Winchester. This does not include additional agglomeration benefits that could be attributed from the wider economic region – for example, with the inclusion of improved agglomeration benefits between Solent Ports and the Midlands/London. The assessment does not include this wider economic region, but it would likely result in greater economic benefits if it were to do so.</p>	<p>so nonsensical and irresponsible.</p>
<p>REP5-040 1</p>	<p><i>Question Reference 2.2.1 WCC, NE, SDNPA (Page 1) – The Applicant states, re the St Catherine’s grassland: The critical load for this habitat is 15 kg N/ha/yr. Natural England Report 210 indicates increases of at least 0.4kg N/ha/yr can result in the loss of one species from a habitat. Whilst this research does not relate to the habitats present within the St Catherine’s Hill SSSI and so is not directly comparable, it is considered to be a precautionary threshold based on sensitive heathland habitats. This research also shows that habitats that have already been subject to high background nitrogen deposition, as in this instance, can develop an effective tolerance to the effects of further deposition. I believe tolerance of nitrogen by grassland species to be an erroneous assumption that the applicant needs to cite evidence for. Wildlife Trust downland management experience is that NE requires us to physically remove nitrogenous material, such as ash from brash burning, from the grassland sites.</i></p>	<p>The tolerance of grassland and other habitats to increases in nitrogen deposition relative to existing background levels is presented in Table 21 of Natural England Commissioned Report NECR210 Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance.</p>	<p>See REP5-038:4 above</p>
<p>REP5-040 2</p>	<p><i>Question Reference Q6.2.17 (Page 2) - Following the Prime Minister’s recent U-turn, it is now apparent that the Government’s transport</i></p>	<p>Please refer to the Applicant’s response to ExQ3 6.3.7 in the Applicant’s Response to Examining Authority’s Third Written Questions (ExQ3) (Document Reference 8.22).</p>	<p>Will refer to this in later submission on NH response to EXQ3</p>

	<i>decarbonisation trajectory is no longer applicable to estimating the operational carbon consequences of the scheme, since it results in increased proportion of ICE vehicles relative to that previously assumed. We submit that this specific issue needs separate consideration within this inquiry and a revision of the Climate modelling documents and the cost-benefit assessment of the carbon emissions.</i>		
REP5-040 3	<i>Question Reference 16.2.5 (Page 4) - We reiterate that “Most Likely” estimate has to come with an error bar – i.e. risk factor that ought to figure in the cost-benefit. “Most likely” is a statistical term and relates to the known probability distributions of the factors that enter the calculation. The error bar on this estimate can be computed from those distributions. Optimism bias is an additional factor recognising that the Applicant, on average, distorts the “Most likely” calculations significantly downwards. Strictly in risk analysis, the error bar on “Most-likely” needs to be added (in the normal way of summing variances) to the average optimism bias for this sort of scheme.</i>	The Applicant maintains its position with respect to optimism bias as set out in response to ExQ2 16.2.5 in the Applicant’s Response to Examining Authority’s Second Written Questions (8.17, REP5-026).	The Applicant persists in refusing to treat a statistical question statistically.
REP5-040 4	<i>Question Reference 16.2.7 (Page 4) - Our understanding of the air quality benefit is that it arises from the supposed traffic reductions (actually the modelled traffic reductions from the increased traffic levels that are predicted for Do Minimum, but which can only be brought about by the scheme allowing such traffic growth in the corridor – see our other D5 submission) on the internal network of Winchester. Since we have demonstrated that no statistical significance can be given to those</i>	Please refer to the Applicant’s response to ExQ2 16.2.7 in the Applicant’s Response to Examining Authority’s Second Written Questions (ExQ2) (8.17, REP5-026) for an explanation of how the changes in air quality have been monetised. The Study Area for the assessment includes the wider highway network where increased traffic flows are predicted by the model as well as Winchester City Centre where decreased traffic flows are predicted.	See REP4-055:2

	<i>reductions the AQ economic benefit has to be regarded as illusory. Since traffic is induced by this scheme there will of course be AQ disbenefits elsewhere, particularly in the areas where new trips begin or end. These disbenefits are ignored by the Applicant.</i>		