

Jason Newman Environmental Quality Team Manager

WRITTEN REPRESENTATION

HIGHWAYS ENGLAND'S RESPONSE

ADDITIONAL COMMENTS FROM JASON NEWMAN ENVIRONMENTAL QUALITY TEAM MANAGER

1. SLOUGH CONTEXT

1.1 Slough is a compact densely built-up Borough with a population of some 143,000 which is predicted to rise by at least 10,000 residents by 2022. The M4 fringes the southern edge of the town and runs approximately parallel to the A4, the historic route between London and Bath. Three motorway junctions serve Slough:

- *Junction 7 linking with the A4 via the Huntercombe Spur;*
- *Junction 6 linking with the A355 which connects southwards with Windsor and northwards with Slough Trading Estate, South Buckinghamshire and the M40; and*
- *Junction 5, the Langley Interchange, linking with the A4 and giving access to Heathrow and Slough town centre.*

Highways England Comment

1.1.1 No response required.

1.2 Between Junctions 7 and 6 the M4 runs close to residential areas and public open space at Cippenham (Mercian Recreation Ground). East of Junction 6 the motorway fringes residential areas and school grounds at Chalvey and Herschel Park. East of Junction 5 it severs the built up area, with Langley to the north and Brands Hill to the south. Air quality and noise are major concerns and Slough Borough Council (SBC) is anxious to protect its residents and others from negative impacts arising from the Smart Motorway scheme.

Highways England Comment

1.2.1 The air quality assessment for the M4 Junctions 3 to 12 Smart Motorway scheme (the "Scheme") considered sensitive receptor locations (i.e. residential properties) along the length of the Scheme, including those between junctions 7 and 6, east of junction 6 at Chalvey and Upton (near Herschel Park), Langley and Brands Hill. Within Slough Borough Council's administrative area 11 sensitive receptors are predicted to experience small increases in annual mean NO₂ concentrations at concentrations above the objective value. Mitigation measures are not proposed as significant air quality effects on the Scheme as a whole are not anticipated.

1.2.2 With regards to noise, as reported in Chapter 12 of the Environmental Statement ("ES") (Application Document Reference 6-1, APP-152), the magnitude of impact for the Scheme is minor beneficial in the short term and negligible in the long term, with the vast majority of the Scheme corridor experiencing negligible or minor reductions in noise levels with the Scheme in operation. This includes the areas referenced in this representation.

- 1.2.3 However, it is noted in paragraph 12.4.112 of the ES (Application Document Reference 6-1, APP-152) that Highways England considers that there is potential to improve further the noise climate within the Scheme corridor. A qualitative appraisal of an enhanced noise mitigation study to achieve this is provided in Appendix 12.5 of the ES (Application Document Reference 6-3, APP-351). This enhanced noise mitigation study comprises the possible provision of additional noise barriers and the possible replacement of some existing noise barriers with higher noise barriers.
- 1.2.4 The quantitative assessment for the enhanced noise mitigation study is based on a detailed cost/benefit analysis, the results of which are provided with the submission at Deadline V.
- 1.2.5 The areas referenced in this representation are included in this enhanced noise mitigation study. The proposed additional barrier provision is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158), Sheets 10 to 14 inclusive are relevant to the Borough of Slough.
- 1.3 *Because of its proximity to London, Heathrow and the M25, and being home to the extensive Slough Trading Estate, the Borough experiences high levels of traffic. Traffic leaving or joining the M4 at Slough regularly causes queuing and congestion on the local road network during peak periods. Occasionally, heavy congestion or an incident on the M4 can bring traffic in Slough to a virtual standstill as drivers divert off the motorway. SBC notes from the Socio-Economic Report (2.1.1 APP-090) that the M4 typically carries over 130,000 vehicles per day and that this is forecast to increase to an average 160,000 vehicles per day over the next 20 years. Unless properly managed, this additional traffic could significantly increase pressures on the local road network and create additional noise and air pollution.*

Highways England Comment

- 1.3.1 Highways England confirms that the M4 typically carries 130,000 vehicles a day and that it is expected that this will rise to an average 160,000 vehicles a day. This is the increase in traffic forecast to arise without the Scheme - it is a reflection of national economic growth in general and the Thames Valley in particular. Highways England considers that the Scheme will play a major role in managing future traffic conditions in conjunction with the local authorities through their respective Local Transport Plans.
- 1.3.2 The future traffic conditions without the Scheme (“Do Minimum”) situation have not been assessed for air quality, except as a basis upon which to compare against the Scheme (“Do Something”) air quality effects. It is the comparison of the Do Minimum to the Do Something situation against which the evaluation of air quality effects is undertaken. Both the Do Minimum and Do Something include reasonably foreseeable proposed developments in the proposed opening year of the Scheme, and as such, the effects of future development in the area along with the Scheme have been considered for air quality. Additionally, total pollutant concentrations in the proposed opening year of the Scheme (2022) are predicted to be lower than the current situation due to anticipated improvements in vehicle emission rates and background concentrations even with projected increases in traffic flows.
- 1.3.3 The noise assessment is based on calculated noise levels and noise level changes resulting from the operation of the Scheme. The assessment considers the short

term changes (on Scheme opening) and the long term changes (15 years after opening) as required by Design Manual for Roads and Bridges (“DMRB”). Noise levels with and without the Scheme in operation are calculated from the traffic data outputs from the traffic model, and take into account traffic flow changes resulting from the operation of the Scheme and traffic flow changes resulting from increases over time. As stated in the response to 1.2 above, it is expected that there will be negligible/minor noise reductions to the Slough area with the implementation of the Scheme, even without the incorporation of the barrier provision arising from the enhanced noise mitigation study.

- 1.4 *Details comments were submitted within SBC Local Impact Report and SBC is still of the view the comments are relevant.*

Highways England Comment

- 1.4.1 Highways England confirms that comments were provided in response to the Slough Borough Council Local Impact Report at Deadline III (REP3-017).

A. Preliminary Matters (Q1, Q2, Q3)

- 1.5 *SBC is generally satisfied with the methodology applied within the Environmental Impact Assessment by Highway England and its consultants. However, SBC would like to have further discussions with HE with respect to localised environmental impacts on our local road network because SBC is of the view these impacts, particularly junction and highway capacity and air pollution require more detailed assessments.*

Highways England Comment

- 1.5.1 Highways England has provided Slough Borough Council with additional traffic flow data from the M4 traffic model and will continue to engage with Slough Borough Council on matters of concern to the Council, including junction and highway capacity and air quality. However, junctions consistent with the other parts of the road network have been modelled in the same level of detail within the air quality model.

- 1.6 *SBC along with its neighbours LB Hillingdon, South Bucks DC, Bucks CC has compiled a list of significant infrastructure projects and schemes that should be taken into account as part of a cumulative impact assessment.*

Highways England Comment

- 1.6.1 Highways England is providing separate comments at Deadline V in response to the cumulative developments joint statement submission made by South Bucks District Council, London Borough of Hillingdon, Slough Borough Council and Buckinghamshire County Council at Deadline IV.

- 1.7 *The Goodman Colnbrook (SIFE) development will impact significantly on the Brands Hill AQMA 2, and also on the Smart Motorway. SBC would like HE to demonstrate the impact the change in concentrations of air quality on all our residential receptors taking both schemes into account, as well as determining the significance of the combined change.*

Highways England Comment

- 1.7.1 The air quality assessment for the Slough International Freight Exchange (“SIFE”) scheme (2015 Addendum, based on Department for Environment, Food and Rural Affairs (“Defra”) predictions) identified a maximum increase in annual mean concentration of NO₂ at sensitive locations within their study area of +1.1 µg/m³ in their assessment year of 2020 (at 100% operation). The highest predicted concentration of annual mean NO₂ in the M4 Scheme assessment at sensitive receptors near junction 5 (those potentially affected by SIFE) is 37.7 µg/m³. Even if this additional increase from SIFE was added to the predicted concentrations in 2022 for the Scheme, then the highest concentration would be 38.8 µg/m³, which is below the air quality objective of 40 µg/m³. It is therefore not envisaged that the combination of the Scheme and SIFE contributions of NO₂ would lead to annual mean concentrations above the objective value around junction 5, and so the Scheme is not anticipated to have a significant cumulative effect on air quality.

B. Air Quality (Q2, Q17, Q28)

- 1.8 *SBC appointed air quality expert, Dr Scott Hamilton has submitted detailed evidence with respect to air quality impacts on our residents as a result of the scheme, taking into account uncertainty in relation to air quality modelling. We have proposed mitigation be considered at residential receptors where the predicted levels exceeding 36µgm-3 this would results in a significantly increase in SBC residential receptors affected by the scheme opening in 2022. We would expect an continuous air quality station to be installed next to our residential properties in Spackmans Way, where a number of minor exceedences have been predicted by the HE air quality consultant at the year of opening,*

Highways England Comment

- 1.8.1 Highways England does not consider that a lower threshold for mitigation measures of 36 µg/m³ should be utilised to target mitigation. Moreover, this approach is not utilised by Slough Borough Council in the local air quality management process (i.e. Air Quality Management Areas (“AQMAs”), which would require the development of mitigation measures, are not declared by Slough Borough Council as being areas where the annual mean concentrations of NO₂ are over 36 µg/m³).
- 1.9 *Air quality is a material planning consideration and a significant public health issue affecting the health of hundreds of thousands of the general population in England and potentially thousand of residents in Slough who live within Air Quality Management Areas. The principal cause of poor air quality in Slough is from local road traffic emissions. The principal cause of poor air quality within the (Air Quality Management Area 1) located in Slough along sections it shares with the M4 is road traffic emissions from the M4. All of SBC, AQMAs have been declared due to breach the National Air Quality Objective for annual nitrogen dioxide (NO2).*

Highways England Comment

- 1.9.1 Highways England agrees.

- 1.10 SBC has a comprehensive air quality monitoring network in place including monitoring air quality within AQMA 1, M4 Air Quality Management Area the results are presented in table 1 below and clearly illustrate that sites are consistently breaching the National Air Quality Objectives/EU limits (figures in red)

Table 1 Slough Borough Council Air Quality Monitoring Network M4 (AQMA 1)

Site	M4 AQMA	Distance From M4	Grid Reference		Air Quality Data Sets for M4 AQMA 1 (2009 - 2013)					5 year Annual Average \pm Mean (ug/m ³)
					Ratified					
					2009	2010	2011	2012	2013	
Annual Mean (ug/m ³)	Annual Mean (ug/m ³)	Annual Mean (ug/m ³)	Annual Mean (ug/m ³)	Annual Mean (ug/m ³)	Annual Mean (ug/m ³)					
Chalvey Air Quality Monitoring Station	Yes	45m (north)	496562	179019	44.4	41.8	44.2	39.0	37.7	41.2
Paxton Avenue	Yes	30m (north)	496050	179258	40.0	38.0	38.9	47.5	42.1	41.3
Spackmans Way	Yes	40m (north)	496272	179187	39.6	41.0	44.0	43.4	43.6	42.3
Ditton Road	Yes	60m (north)	500851	177890	38.6	40.9	40.5	41.0	37.2	39.6
Chalvey Station	Yes	45m (north)	496562	179019	41.4	40.3	41.1	40.8	38.0	40.3
Winvale	Yes	15m (north)	497488	179090	42.1	40.9	46.9	48.3	44.5	44.5
Grampian Way	Yes	50m (north)	501382	178101	42.1	42.3	48.1	45.1	43.3	44.2
TorrIDGE Road	Yes	30m (south)	501637	177999	36.6	47.4	41.2	39.5	43.3	41.6

Highways England Comment

1.10.1 The monitoring results are acknowledged and have been used in assessment.

- 1.11 The Government primary driver for action on air quality is the impact it can have on health and the environment. The draft plans set out actions planned, being implemented and already taken at local level, regional and national level to meet the annual and hourly EU nitrogen dioxide (NO₂) limit values over the shortest possible time. However, it clear that local breaches will fall on local authorities to remedy and SBC is concerned that without sufficient mitigation the M4 Smart scheme will delay compliance.

Highways England Comment

1.11.1 The outcome of the compliance risk assessment demonstrates that the Scheme would not affect the UK's ability to comply with the Air Quality Directive, in line with Highways England Interim Advice Note 175/13 'Updated air quality advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for user of DMRB Volume 11, Section 3, Part 1 'Air Quality''.

- 1.12 Slough falls within the South East UK 0031 Zone, and has submitted to DEFRA 40 local measures to improve NO₂. The government predict the South East Zone will be compliant with the EU limits by 2020, but only if Euro 6 emission standards perform as modelled and there is significant concerns that, real world Euro 6 passenger diesel cars emissions standards are not performing as modelled in which case compliance may not be reached by 2020 as the Government currently predicts.

Highways England Comment

1.12.1 The reporting of compliance against EU Limit Values and dates for zonal compliance is a matter for Defra, and compliance with emission standards is a matter for Government.

1.13 *Additionally, SBC have significant concerns regarding the increase in local road traffic through the Slough strategic network which is already at capacity at a number of junctions and experiences heavy congestion during peak hours. Slough over the next 3 years (2015 – 2017) will be investing over £18 million in widening the A332 corridor and A355 as well as the A4 to provide a dedicated bus lane. All these schemes are aimed at reducing congestion, improving traffic flow, improved journey reliability, facilitating regeneration, promoting economic growth, and aiding the modal shift to mass transport (buses) and improving air quality. SBC are concerned the M4 Smart scheme will jeopardise the effectiveness of these schemes, through significant increase in local traffic flows. Therefore SBC believes that air quality impact assessments are required for all its Air Quality Management Areas which results in additional traffic flows above 100 AADT as a result of the scheme.*

Highways England Comment

1.13.1 Highways England acknowledges Slough Borough Council's aims to reduce congestion, improve traffic flow, improve journey reliability, facilitate regeneration and promote economic growth. These objectives are common to those of the M4 smart motorway and it is designed to achieve them. In relation to increasing the uptake and mode share for public transport, paragraph 4.4 of the Thames Valley Multi Modal Study ("TVMMS") explains that the strategy comprises inter-related policies to achieve modal shift, manage demand and provide improved management of road space through design and information.

1.13.2 The Scheme will provide improved management of road space on the M4, working alongside other local policies to be implemented by Slough Borough Council and other local authorities along the route to achieve the wider strategy. Rather than jeopardising the effectiveness of Slough Borough Council's initiatives, the Scheme is complementary to them and in accordance with the overall strategy.

1.13.3 However, it should be noted that Highways England undertakes its assessment in line with the published advice which considers changes of +/-1000 AADT.

Statement of Common Ground

1.14 *The HE within the draft SoGC issued to SBC and yet to be accepted (under Matter Not Agreed section 4.8 'it is not agreed that Highway England' will implement speed restrictions as a mitigation measure to alleviate poor air quality as this is not compliant with Highway England Policy". SBC is still waiting for HE to return the SoCG and to jointly sign it, we apologise for the delay in sending this document to the Inspector.*

Highways England Comment

1.14.1 Highways England confirm that the revised Statement of Common Ground ("SoCG") is currently under preparation with the changes made by Slough Borough Council being reviewed by the Highways England specialists.

- 1.14.2 A meeting will be arranged after Deadline V. Highways England will issue the SoCG to Slough Borough Council in advance of that meeting, for their review, with the aim of jointly signing the document at the meeting.
- 1.14.3 However, the outcome of the air quality assessment demonstrates that the Scheme is not likely to have a significant air quality impact, nor is it likely to affect the UK's reported ability to comply with the air quality directive. Consequently, this would not trigger the need for additional mitigation.
- 1.14.4 Highways England has set out in its Delivery Plan and Strategic Business Plan a commitment to support improvements to the environment, including air quality, where it can.
- 1.14.5 Highways England is looking to achieve improved air quality across the Strategic Road Network, and is exploring options and opportunities to do this, and recognises the importance of other key partners, e.g. local authorities in delivering any intervention. The M4, in common with other sections of the Strategic Road Network, will be included in this work.

Air Quality Mitigation Measures

- 1.15 *HE state in Chapter 6: Table 6.22 that it will be difficult to avoid or reduce or repair or compensated for effect 'as an existing route traditional options to adjust alignment are limited'*
- 1.16 *However, SBC consider other options are available to mitigate the impact of M4 Smart Motorway on residential receptors include:*
 - 1.16.1 *Barrier treatment changing the height of the barriers to reduce NO2 exposure to residential receptors to within EU limits.*
 - 1.16.2 *Variable speed controls to reduce NO2 exposure to residential receptors to within EU limits.*
 - 1.16.3 *As a last resort Boundary treatment of residential facades with carbon filtration ventilation systems to reduce the impact of NO2 exposure where these are shown to breaching UK Air Quality Objectives/EU limits.*

Highways England Comment

- 1.16.4 The outcome of the air quality assessment demonstrates that the Scheme does not have a significant impact, nor affects the UK's ability to comply with the air quality directive, and therefore does not require mitigation.
- 1.16.5 In respect of barriers, Highways England is currently undertaking an air quality barrier trial alongside the M62, close to junction 18. Highways England needs to conclude that trial before it is able to make any decisions as to whether they are an effective measure.
- 1.17 *SBC has at its own significant expense, requested its consultants Ricardo-AEA to consider mitigation options to protect our residents from the potential operational impacts of the M4 Smart Motorway in 2022. Dr Scott Hamilton has submitted his evidence report with relevant references for the Inspectors to consider. The option of barriers is one that SBC believes should be explored further as an effective mitigation measure against poor air quality and to*

ensure our residents are not experiencing breach of the national air quality objectives/ EU limits at the year of opening 2022.

Highways England Comment

1.17.1 Highways England will respond in detail to the evidence submitted by Dr Scott Hamilton.

Construction Traffic Compound 9

1.18 *SBC also raises concerns about residential receptors that may be affected by construction phase impact, in particular location of Compound 9 within our AQMA 2. This AQMA2 illustrated in Figure 1 below is experiences some of the highest concentrations of air pollution with the Borough.*

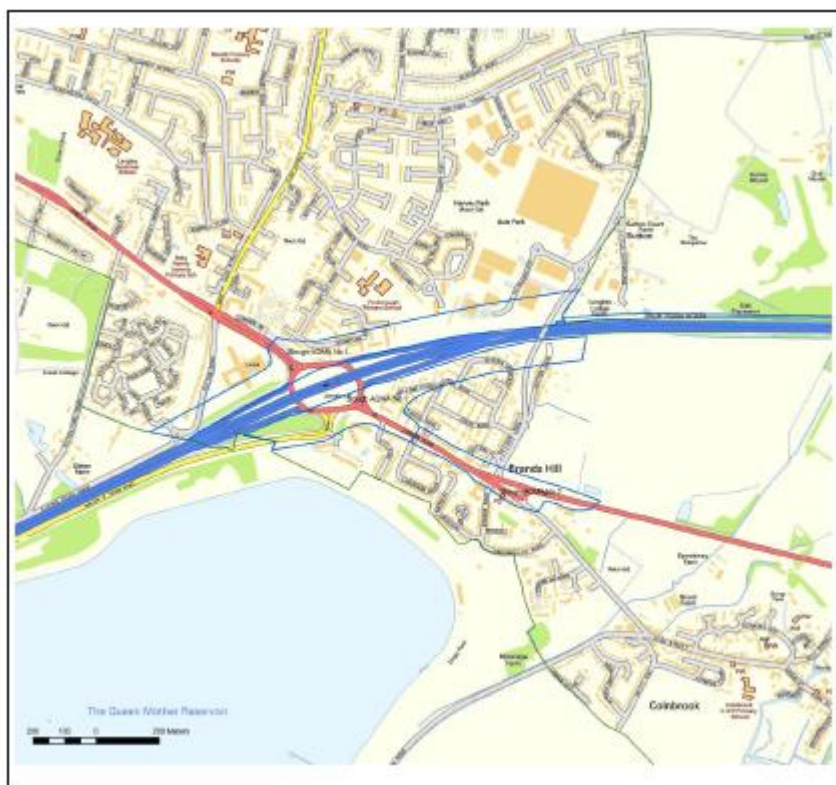


Figure 1: Slough Borough Council: AQMA location– Brands Hill

Highways England Comment

1.18.1 Construction Compound 9 has already been identified as a site which will require the highest level of mitigation measures for air quality due to its proximity to residential properties. These measures are listed in the Outline Construction Environmental Management Plan (“CEMP”) (Appendix 4.2A of the ES) (Application Document Reference 6-3, APP-293).

1.18.2 Preliminary estimates of the construction traffic, presented in the Engineering and Design Report (“EDR”) (Application Document Reference 7-3, APP-096), indicate that on average it is expected that there will be an additional 150 heavy good vehicles (“HGVs”) on the local highway network daily, across the length of the Scheme route and between any construction compounds used. Therefore, it is

considered that a detailed air quality assessment will not be required for Construction Compound 9 as this traffic will be spread across the Scheme route and compounds.

- 1.18.3 However, if following the completion of any further construction compound construction traffic flow assessments, higher numbers of HGVs are anticipated (more than 200 HGVs per day over an annual duration), then an air quality assessment will be undertaken for Construction Compound 9 to determine the impact on local receptors and to determine whether any further mitigation measures will be required.
- 1.18.4 The Outline CEMP will be updated at Deadline V to reflect this commitment.

1.19 Details of our diffusion tube network within the Brands Hills AQMA 2 and AQMA M4 are illustrated in Figure 2 below. As compound 9 is located within the area between Sutton Land and London Road partly within the Brands Hill AQMA2 all construction traffic will need to operate through our AQMA2. The ES has failed to address construction phase impact as result of Construction vehicle movements and the HE has applied the DMRB screening approach (which requires a change in HGV trip flows of more than 200 AADT). SBC does not recognise DMRB criteria for requiring an air quality assessment on its strategic road network. SBC applied IAQM guidance “Land-Use Planning & Development Control: Planning for Air Quality” which requires a detailed air quality assessment be undertaken where there is a change of HDV flows of more than 25 AADT within or adjacent to an AQMA.



Figure 2: Slough diffusion tube locations (M4 AQMA 1 and Brands Hill AQMA2)

Highways England Comment

1.19.1 Highways England follows the published Government advice set out in DMRB and associated Interim Advice Note and does not use the Institute of Air Quality Management (“IAQM”) / Environmental Protection UK (“EPUK”) ‘Land-Use

Planning & Development Control: Planning For Air Quality' guidance to inform its judgment on the outcome of the Scheme impacts. The following advice is provided in paragraph 6.3 of the IAQM document:

“6.3 As set out in the introduction in Chapter 1 , this guidance document is not intended to replace guidance that exists for certain types of development, notably:

- *industrial developments that require a Permit;*
- *highways schemes promoted by Highways England;”*

1.20 *SBC has a comprehensive air quality monitoring network in place including monitoring air quality within AQMA 1, M4 and Brands Hill AQMA 2 (where construction compound 9 is located). The results are presented in Table 2 below and clearly illustrate that sites are consistently breaching the National Air Quality Objectives/EU limits (figures in red).*

Table 2 Slough Borough Council Air Quality Monitoring Network Brands Hill (AQMA 1 and AQMA 2)

Site	Within Brands Hill AQMA 2	Air Quality Data Sets for M4 AQMA 1 and AQMA 2 Brands Hill (2010 - 2014) Ratified					
		2010	2011	2012	2013	2014	3 to 5 year
		Annual Mean (ug/m3)	Annual Mean (ug/m3)	Annual Mean (ug/m3)	Annual Mean (ug/m3)	Annual Mean (ug/m3)	Annual Average Mean (ug/m3)
	Within M4 AQMA 1						
Rogans	Yes	54.7	51.1	55.4	56.4	50.9	53.7
Tweed Road	Yes	41.2	38.1	42.0	43.7	39.0	40.8
Brands Hill (A)	Yes	67	61.2	66.7	65.8	53.1	62.8
Brands Hill (B)	Yes			49.1	44.9	42.1	45.3
London Road (B)	Yes			36.6	37.8	38.6	37.7
London Road (C)	Yes	-	-	42.0	37.7	36.6	38.8
Grampian Way	Yes	42.3	48.1	45.1	43.3	42.4	44.2
Torrige Road	Yes	47.4	41.2	39.5	43.3	36.3	41.5

Highways England Comment

1.20.1 The monitoring results are acknowledged and have been used in assessment.

1.21 *SBC would recommend the construction compound is re-sited away from our local Air Quality Management Area, where this is not possible, that a detailed air quality assessment is undertaken to determine the impact on our residential receptors, and that HE also incorporates mitigation.*

Highways England Comment

1.21.1 Highways England has addressed the points raised in response to paragraph 1.18 above.

1.22 *SBC will require all construction site traffic (HDVs) to be Euro VI compliant and (LDVs to be Euro 6 compliant with a 10% plugged in and electric hybrid vehicles to be used. SBC would expect non-road mobile construction machinery to comply with London NRMM standards for emissions.*

Highways England Comment

- 1.22.1 Highways England will ensure that all delivery vehicles and Site Plant will meet current legislation in relation to emissions and road worthiness. Wherever practicable, Highways England will also endeavour to provide the latest vehicle engine models delivering the most efficient fuel and emissions standards. For example, plant no older than 4 years will be used, thus ensuring compliance with all maximum emission standards, as secured by paragraph 6.2.1 j) of the updated CEMP which has also been provided with the Deadline V submission.
- 1.22.2 Whilst the contractor operates a range of hybrid and electric plug in vehicles, the contractor cannot commit to a 10% provision as the range and variety of vehicles required for the construction works cannot be defined at this current stage of the Scheme.

C. Noise and Vibration (Q1, Q5, Q9, Q10)

- 1.23 *SBC is satisfied that the HE has identified locations of sensitive receptors and the areas most exposed have been identified in ES Drawing 12.1. However SBC are not satisfied with the robustness of the noise model to accurately predict night time noise impacts at residential receptors. This is very relevant to potential disturbance from construction activities during the construction phase of the motorway works.*

Highways England Comment

- 1.23.1 The criticism of the noise model is not particularised, and Highways England does not agree that there is any criticism which can be levelled at the robustness of the noise model. Slough Borough Council provides no evidence to support the contention raised.
- 1.23.2 The noise assessment is based on calculation. Monitored noise levels are used to validate the performance of the noise models employed for those calculations. On that basis, it is considered that the model is robust. This topic was fully addressed in Highway England's response to paragraph 3.49 in Slough Borough Council's Local Impact Report (REP3-017).
- 1.23.3 In any event, the contractor will be required to seek a Section 61 Agreement with Slough Borough Council under the Control of Pollution Act 1974. The contractor will provide all required data and information (including, where necessary, measured noise levels at a set of relevant receptors) for the proposed construction activities as part of the submission to Slough Borough Council for that Agreement.
- 1.24 *SBC welcomes the opportunity to comment in detail on the proposed Construction Environmental Management Plan (CEMP) we are particularly concerned about the impact of piling operations (noise and vibration) and are please to see there will be restrictions on times when piling works can be carried out. SBC will continue to work with HE to ensure the CEMP is acceptable to all parties.*

Highways England Comment

- 1.24.1 Highways England is providing an updated version of the Outline CEMP with this response at Deadline V, whereupon Slough Borough Council will have the opportunity to provide further comments on it. Highways England will continue

to discuss matters related to the CEMP with Slough Borough Council until the start of construction works to ensure that the CEMP is acceptable to all parties.

1.24.2 With regards to the noise and vibration issue raised by Slough Borough Council, the noise and vibration assessment, as reported in the ES (Application Document Reference 6-1, APP-152), addresses construction impacts, including those from piling, and identifies likely significant effects. Stand-off distances are provided for piling and ground compaction works, and vibration effects on receptors are reported as being not significant beyond those distances.

1.24.3 In addition, as stated above in the response to paragraph 1.23, the contractor will be required to seek a Section 61 Agreement with Slough Borough Council under the Control of Pollution Act 1974. The contractor will provide all required data and information (including that relating to piling works) for the proposed construction activities as part of the submission to Slough Borough Council for that Agreement.

1.25 *SBC is of the opinion that HE should undertake verification of night noise predictions before the DCO process is ended to determine the accuracy of the model and to readjust night-time noise levels, if required. SBC recommends ambient night-time noise monitoring to be undertaken at the following receptors (CR-66, CR-72, CR-75, CR-81) and (CROB-11, CROB 17 and CROB 18. This will have relevance to residents who may experience excessive construction noise at night and could be eligible for sound insulation or potentially re-homing.*

Highways England Comment

1.25.1 The “night noise predictions” to which Slough Borough Council refers are the calculated prevailing ambient noise levels at the set of receptors employed in the construction noise assessment, as reported in Chapter 12 of the ES (Application Document Reference 6-1, APP-152).

1.25.2 It would not be proportionate for Highways England to be required to carry out verification of night noise predictions before the end of the Examination to determine the accuracy of the model. As stated above, Highways England is confident in the robustness of the model, and in any event, the contractor will be required to seek a Section 61 Agreement with Slough Borough Council under the Control of Pollution Act 1974. The contractor will provide all required data and information (including, where necessary, measured noise levels at a set of relevant receptors) for the proposed construction activities as part of the submission to Slough Borough Council for that Agreement. This process will address fully Slough Borough Council’s concerns regarding the identified receptors (and other receptors within the Slough Borough Council area).

1.26 *The HE detailed noise assessment of demolition, piling and construction is based on BS5228 guidance and references. A detailed noise management plan page 88 to 99 of the Outline revision 1 CEMP, Appendix 4.2A, and set down relevant noise thresholds for noise insulation/temporary re-housing within Table 12.1. The trigger levels at night (22.00 and 07.00) was set at the interim threshold WHO level of 55 dB (A) for noise insulation and 65 dB (A) for temporary housing. This is why measurement of the ambient noise 1m outside the closest residential receptors is essential well in advance of construction works starting.*

Highways England Comment

- 1.26.1 It is confirmed that the derivation of construction noise limits for the Scheme will be based on Table 12.1 of the ES (Application Document Reference 6-1, APP-152). For residential properties close to the motorway, it is acknowledged that the ambient noise levels will be higher than the Category C values in Table 12.1 of the ES. Hence, the noise limits will be based on an increase of 3 dB in the total noise level (ambient plus construction).
- 1.26.2 The noise trigger levels for noise insulation and temporary rehousing are provided in Table 12.1 (including footnotes) of the updated Outline CEMP, provided with the Deadline V submission.
- 1.26.3 With respect to monitoring of ambient noise levels, this has been addressed in the responses to paragraphs 1.23 and 1.25 above. The contractor will carry out measurements of prevailing ambient noise levels to feed into the Section 61 process, as secured by Section 12.4 of the updated Outline CEMP.
- 1.27 *Additionally where the ambient noise is higher than these trigger levels, the ambient noise level will be used as the noise insulation trigger; and the ambient noise level + 10dB will be used as the temporary re-housing trigger level. One of the concerns SBC expressed within its SoCG was the applications for noise insulation or temporary re-housing from occupiers who may have special circumstances. However, residents with children have not been identified and should in our view be considered, particularly in relation to detrimental harm that can be caused to children subject to high levels of noise, even if temporary in nature.*

Highways England Comment

- 1.27.1 Highways England does not agree that residents with children should be viewed as having special circumstances. BS5228-1, which provides the underlying guidance for construction noise assessment, does not distinguish between residential properties with children and those without children.
- 1.27.2 Highways England will consider all applications, supported by evidence, for residents who do have special circumstances. Potential reasoning for the classification of special circumstances is outlined in paragraph 11.5.7 of the Outline CEMP (reproduced below):
- “Highways England will consider all applications supported by evidence for noise insulation or temporary rehousing from occupiers who may have special circumstances. Special circumstances could include night workers, those working in home occupations, local businesses or buildings that provide community facilities requiring a particularly quiet environment and those with a medical condition which will be seriously aggravated by construction noise, and provide noise insulation or temporary re-housing where it is demonstrated that this is necessary.”*
- 1.27.3 With the exception of those who are deemed as having special circumstances, the noise insulation and temporary rehousing policy, as outlined in the Section 11.5 of the Outline CEMP, applies equally to all residents.
- 1.28 *Within Slough the following receptor have been identified as particularly vulnerable during the construction phase from reviewing Appendix 12.3 (App-349) ‘Construction noise data and results’ the assessment suggests a number of Slough’s residential properties (CR-66, CR-72,*

CR-75, CR-81) will experience minor to major magnitude of impact from evening mainline construction noise and night-time resurfacing and traffic management activity as well as night impact from demolition of bridges at CROB 17 and CROB 18 and this also gives SBC concerns.

Table 3 Slough Noise Sensitive receptors – Construction Noise Levels night-time

Receptor	Threshold Value or existing façade level (Night) (dB LAeq, T)	Bridge Demolition – calculated façade level (dB LAeq, T)	Bridge Removal (dB LAeq, T)	Resurfacing (dB LAeq, T)	Traffic management (dB LAeq, T)
CR-66	63			+4 (67)	+ 1 (64)
CR-72	63			+7 (70)	+3 (66)
CR-75	74			+ 7 (81)	+ 3 (77)
CR-81	67			+ 7 (74)	+ 3 (70)
CROB-11	64	+2 (66)			
CROB-17	70	+ 4 (74)	+1 (71)		
CROB-18	61	+ 3 (64)			

Highways England Comment

1.28.1 Highways England agrees that the identified receptors may be subject to significant construction noise effects during the evening and night-time periods. However, as stated in paragraphs 12.4.53 and 12.4.56 of the ES (Application Document Reference 6-1, APP-152), the activities responsible for these effects are dynamic in nature, and these worst-case noise levels will prevail for only a short period of time. The duration and scheduling of these dynamic works will be defined once the design and construction programme has been developed further.

1.29 *The CEMP has since been revised dated 5th November and includes noise limits and noise monitoring (but still requires final approval with Local Authorities under a SoGC). It will also need to be submitted and approved and secured by Requirement 8 (Schedule 2) of the DCO.*

Highways England Comment

1.29.1 Highways England confirms that an updated version of the Outline CEMP has been provided at Deadline V. Furthermore, Highways England agrees that the CEMP must be submitted and approved as secured by Requirement 8 in Schedule 2 of the draft Development Consent Order (“DCO”) (REP3-005).

1.30 *SBC does not raise concerns with the Section 61 approach, but it does raise concerns about the proposed noise limits and construction activities at night-time. In particular, under the second revision of the CEMP that: night-time: 75 dB LAeq, 1 hour (free field), with restrictions on the types of activities.*

Highways England Comment

1.30.1 In relation to the concerns raised about the proposed noise limits and construction activities at night-time, Highways England confirms that the 75 dB LAeq, 1 hour (free field) noise limit is based on experience taken from the construction of the M3 smart motorway, where it was found that the day and night time background noise levels were in excess of 70dB. It was for this reason that the limit was set as the same for both. However, in all cases, any noise limit that is proposed needs to

reflect the pre-construction ambient noise conditions and the usual approach for limiting construction noise is to allow +3dB above the existing ambient noise level. The contractor will use this methodology to prepare the Section 61 Agreement with Slough Borough Council in order to gain suitable and agreeable noise limits for the works.

- 1.31 *SBC opinion is that the following activities shall be restricted at night; piling activities; demolition of bridges affect residents CROB-17 and CROB-18; mainline evening mainline construction noise and night-time resurfacing and traffic management activity at receptors (CR-66, CR-72, CR-75, CR-81).*

Highways England Comment

- 1.31.1 Bridge demolitions, re-surfacing and traffic management would usually need to be carried out at night for safety reasons as lane closures will be required to provide safe working space. Bridge demolitions in particular would involve full closure of the M4 hence could not be carried out during the daytime. As set out in Highways England's procedures and route management restrictions, the standard methodology for all motorway schemes is that lane restrictions / closures cannot proceed until traffic flows have reduced below a predefined level, which thereby removes the ability for a contractor to close lanes within peak hours.
- 1.31.2 Highways England confirms that restrictions of piling activities at night time will be implemented. Piling at night would only be undertaken where access cannot be provided during the day and lane closures are required to provide safe access.

- 1.32 *This level is excessively high in SBC view and would cause significant harm to local residents even during temporary phase of construction works. At this level CR66, CR72 AND CROB-18 would be eligible for re-homing and CR 75, CR81 and CROB-17 would be eligible for noise insulation.*

Highways England Comment

- 1.32.1 Highways England assumes that the level referred to in this representation is the night-time noise limit also referred to in paragraph 1.30 above.
- 1.32.2 As stated above, the contractor will be required to seek a Section 61 Agreement with Slough Borough Council under the Control of Pollution Act 1974. Noise and vibration limits and night-time controls on activities will form part of this Section 61 Agreement.
- 1.32.3 The provision of noise insulation or temporary rehousing to mitigate the effects of construction noise are based not just on the trigger levels, but also on the periods of time those trigger levels are exceeded (at least 10 days out of any period of 15 consecutive days or, alternatively, 40 days in any 6 month period). Highways England therefore does not envisage that any properties will meet the requirements for noise insulation or temporary rehousing, but will review this position as necessary.

- 1.33 *Once the night time noise level have been monitored and validated, SBC suggest setting a noise limit at night where the total noise (ambient + construction noise) is set at +3dB or 75dB which is lower above the measured night-time ambient level in absence of construction activity.*

Highways England Comment

1.33.1 As stated in response to 1.30 above, the contractor will apply the methodology of limiting construction noise to allow +3dB above existing ambient noise level. This methodology will form the basis for the application for a Section 61 Agreement with Slough Borough Council under the Control of Pollution Act 1974.

1.34 *With respect to enhanced measures and new and replacement noise barriers SBC welcomes additional noise barriers and would recommend higher noise barriers would have both noise and air quality benefits. SBC would advise that noise barriers are erected to protect The Myrke allotments, and Mercian Recreation Ground.*

Highways England Comment

1.34.1 As stated above in response to paragraph 1.2, a quantitative assessment has been undertaken for an enhanced noise mitigation study. The Myrke Allotments and Mercian Recreation Ground were included for consideration in the enhanced noise mitigation study.

1.34.2 The proposed barrier provision at the Myrke allotments is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158), Sheet 12 is relevant to this area. The results of the enhanced noise mitigation study show that no additional noise barrier is required in this location, however, Highways England will incorporate a closed boarded fence along highway boundary for the length of the allotments instead of the standard timber post and four rail motorway boundary fence.

1.34.3 The proposed barrier provision at the Mercian Recreation Ground is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158), Sheet 10 is relevant to this area. The results of the enhanced noise mitigation study show that 236m of 3m high new noise barrier should be provided and the previously proposed 335m long barrier should be increased to a height of 3m. The provision of this mitigation would provide further noise decreases to the area around Mercian Recreation Ground, in addition to the minor noise decreases predicted on Scheme opening (without enhanced mitigation) presented in Sheet 10 of Drawing 12.4 of the ES (Application Document Reference 6-2, APP-267).

1.35 *The following environmental noise information is also requested with respect to the smart motorway scheme.*

- *SBC seeks clarification of all slough residential properties that may be entitled to noise compensation or insulation under the Land Compensation Act 1973 and the Noise Insulation Regulations 1975, as amended 1988. ?*
- *It appears that a significant number of properties will experience (what is termed a negligible increase of more than 1dB as a result of this scheme, but how many will also experience the specified level of L 10 (18-hour) of 68dB(A)?*

Highways England Comment

1.35.1 Highways England confirms that the noise and vibration assessment, as provided in Chapter 12 of the ES (Application Document Reference 6-1, APP-152)

indicates that no properties will qualify for noise insulation under the Noise Insulation Regulations 1975 (as amended 1988).

- 1.35.2 A negligible noise increase is defined as 0.1 to 0.9 dB in the short term and 0.1 to 2.9 dB in the long term (see Tables 12.7 and 12.8 in the ES (Application Document Reference 6-1, APP-152)).
- 1.35.3 In the short term, only two residential properties are predicted to experience noise level increases of 1 dB or more (of 1.0 and 1.3 dB) as a result of the operation of the Scheme. However, for these properties the Scheme noise levels are assessed as below 68 dB $L_{A10,18h}$.
- 1.35.4 In the long term, only 80 residential properties (out of a total of 23,050 in the detailed study area) are predicted to experience noise level increases of 1 dB or more when comparing Do Minimum 2022 to Do Something 2037. The maximum predicted increase is 1.7 dB. Hence, these increases are assessed as negligible in the long term.
- 1.35.5 Of these 80 properties, only 14 are predicted to experience resultant noise levels equal to or above 68 dB $L_{A10,18h}$. It should be noted that the properties are at significant distances from the Scheme where the noise levels are dominated by changes in traffic flows on roads other than the Scheme. This has been noted in the noise assessment for the Scheme, as the properties will experience similar noise increases in the long term if the Scheme did not go ahead (Do Minimum). This is shown by the maximum difference between Do Minimum 2037 and Do Something 2037 of 0.2 dB. Hence, these properties do not qualify for noise insulation under the Noise Insulation Regulations 1975 (as amended 1988).