DOCUMENT 2

HIGHWAYS ENGLAND RESPONSE TO

RELEVANT REPRESENTATIONS OF

CAMPAIGN FOR BETTER TRANSPORT AND FRIENDS OF THE EARTH

Key

	Pressure/Other Groups

243	Campaign for Better Transport (No specified location)	"Campaign for Better Transport strongly objects to these proposals. We will expand on this summary of the main issues in our full submission. 1. Increase in traffic, air, noise and light pollution	**<u>Traffic:</u>** There will be a slight increase in traffic as a result of the Scheme. Table A-5 within Appendix A of the Traffic Forecasting Report (which is provided at Appendix 1 to Document 3 submitted at Deadline I - Response to Relevant Representations) provides details of the total amount of trips forecast in the Do Minimum (without Scheme) and Do Something (with Scheme) for the opening year (2022) and the design year (2037). The difference between the results of the Do Minimum and Do Something scenarios represents the amount of 'induced' traffic arising from the implementation of the Scheme. As shown in Table A-5, the overall levels of induced trips, relative to the Do-Minimum scenario, are less than 0.3 % in all time periods in both forecast years. Over a 12 hour day, the level of induced traffic would equate to some 6,500 additional trips out of a total of 465,000 or 0.14%. Consequently, this small increase in

			traffic which is expected as a result of the Scheme will not out-weigh the improvements in congestion that will result from the Scheme. **Air Quality:** Whilst there will be a slight increase in air pollution as a result of the Scheme, the overall assessment of effects indicates that air quality effects are not significant, along the length of the Scheme and on the local road network. Further detail on the air quality assessment, which has been undertaken for the Scheme, is provided below. **Noise:** Campaign for Better Transport ("CBT") maintains that there will be increases in traffic noise levels to residential and other sensitive receptors as a result of the Scheme. However, the Scheme does not result in an increase in noise pollution. The forecast impacts of the mitigated Scheme are mostly beneficial. CBT also put forward two alternatives (no hard shoulder running and limited hard shoulder running) which they say will result in lower noise levels than the proposed Scheme. The change in noise level to a receptor resulting from using the hard shoulder as a running lane is a function of several factors:- 1) The distance from the motorway to the receptor 2) The traffic source moving closer to the receptor 3) The change in traffic flow, %HGV and speed resulting from the use of the hard shoulder 4) The change in shielding provided by any existing noise barriers or ground forms 5) The traffic on the far carriageway moving further away 6) The change in the road surface properties

			If factors 3), 4), 5) and 6) did not change between the Do Minimum and Do Something scenarios (that is, without the Scheme and with the Scheme), the increase in noise level resulting from the use of the hard shoulder would be approximately as shown below:- Distance to receptor Increase in noise level (dB) 10 1.9 20 0.8 30 0.5 Thus, for distances of 20 metres and more, the increase is less than 1 dB, a negligible increase. In practice, factors 3), 4), 5) and 6) play a part (particularly factor 6), where the provision of a low noise surface provides a 3.5 dB reduction over a standard HRA surface). The effects of these combine to give the resultant change in noise level, which can be a decrease even though the traffic is moving slightly closer to receptors For the “M4 J3-12” Smart Motorway Scheme, the mitigation strategy comprises the provision of a low noise surface across all lanes of both carriageways plus the provision of a number of additional noise barriers. Existing noise barriers will be retained, or replaced like for like if in poor condition. The existing barriers and proposed additional barriers are shown in Drawing 12.2 Sheets 1 to 16 of the Environmental Statement. With this mitigation strategy, the forecast impacts of the Scheme are generally beneficial with negligible / minor noise reductions in the opening year with the Scheme compared to the situation without the Scheme. The changes in noise levels within the Scheme study area are provided in chapter 12 and associated drawings of the Environmental Statement. Drawing 12.4 Sheets 1 to 16 shows the changes in noise level as

			a result of the Scheme becoming operational. The negligible / minor noise reductions are evident along the complete length of the Scheme. Drawing 12.5 Sheets 1 to 16 shows the long term changes in noise levels as a result of the Scheme. The negligible noise changes are evident. With respect to the alternatives put forward by Campaign for Better Transport, whilst it is true that not using the hard shoulder as a running lane will result in lower noise levels to sensitive receptors, the reductions in noise level with either of these alternatives will generally be negligible (see table above, which shows the change in noise level to receptors). **Light:** The Scheme is anticipated to have a neutral significance of effect on the local landscape as a result of light pollution. The landscape and visual amenity impact of light pollution from the Scheme has been assessed as part of Chapter 8 of the ES (Application Document Reference 6.1). The presence of existing road lighting, and illuminated signs and gantries, has been taken into account in establishing the night-time characteristics of the Scheme location, in terms of relative brightness or darkness. The implications of the Scheme (including proposed road lighting, and illuminated signs and gantries) for the night-time characteristics has then been assessed. A neutral significance of effect is anticipated as a result of the Scheme, principally because road lighting will be retained at its current locations and no new road lighting will be introduced (see paragraph 8.2.11). In addition, where road lighting is required existing lighting will be removed and replaced with modern light emitting diode ("LED") lighting, with a central management control system (see paragraph 6.3.44 of the EDR).
		If this scheme goes ahead, traffic will increase on the motorway, roads	This point has been addressed above.

		leading to it, and the surrounding road network.	
		Air pollution impacts will be higher than estimated, even though the Environmental Statement (ES) already shows areas where legal limits will be breached if the Scheme goes ahead. The vehicle emissions factors used in the ES were updated to be more optimistic about future reductions in 2013 [IAN 170/12 rev3], while all the emerging evidence is that the EuroVI standards test are similar to previous standards in terms of underestimating real world emissions. Following recent legal cases, the technical advice note on assessing the risk of breaching EU directives is currently suspended [IAN175/13].	**Air Quality:** As noted above, whilst there will be a slight increase in air pollution as a result of the Scheme, the overall assessment of effects indicates that air quality effects are not significant, along the length of the Scheme and on the local road network. The methodology for determining the local air quality study area is prescribed by the Design Manual for Roads and Bridges ("DMRB") Volume 11, Section 3, Part 1 'Air Quality' (HA207/07) (Ref 6.1) and associated Interim Advice Notes ("IANs") (Ref 6-2, 6-3 and 6-4 detailed in chapter 18 of the ES) and set out in 6.2.31, bullet points a) through to e). These criteria are used to identify whether significant changes in air quality are likely. If a criterion is not met or exceeded, then a significant change in air quality is not anticipated. Where these criteria have been met and therefore a risk of significance exists, sensitive receptors have been assessed to understand the risk. Increases in traffic along the motorway network, such as the Scheme route, have also been assessed. The overall operational assessment of significance of the Scheme is set out in paragraph 6.15.16 and Tables 6.21 and 6.22 of the ES. This overall assessment of significance indicates that air quality effects are not significant. Over the last few years the rates of improvement anticipated by the Department for Environment, Food and Rural Affairs ("Defra") have not been realised as quickly as anticipated. This is due to the dieselisation of the vehicle fleet to a greater extent than previously anticipated, with the associated higher emissions of NO_x and NO_2, and also because of the gap between the anticipated laboratory based rates of NO_x emissions compared with real world rates of NO_x emissions. The approach utilised in the assessment of future air quality recognises this and therefore Highways England has not

			assumed that in the future that all improvements in air quality occur at the rate anticipated by Defra. In particular, the treatment of future air quality has been considered through the updated air quality advice on the assessment of future NO_x and NO_2 projections known as long term trend ("LTT") analysis (Interim Advice Note ("IAN") 170/12 v3. Updated air quality advice on the assessment of future NO_x and NO_2 projections for users of DMRB Volume 11, Section 3, Part 1 'Air Quality), which only assumes a portion of improvements in air quality assumed by Defra will occur. This is described in paragraphs 6.2.57 to 6.2.60 of the Environmental Statement. In this approach all modelling is undertaken consistent with Defra emission rates and associated local air quality management tools. The LTT rates of improvement are applied to post-processed Defra based predictions to a more conservative set of results. It is these more conservative results which have been utilised in the overall operational assessment of significance of the Scheme, as set out in paragraph 6.15.16 and Tables 6.21 and 6.22 of the ES. This overall assessment of significance indicates that air quality effects are not significant.
		The issue of air pollution must be examined in full.	It is considered that the air quality effects of the Scheme have been assessed and examined in full, as outlined above.
		2. Serious concerns about safety The Smart Motorway design has no hard shoulder and only periodic emergency refuge areas, 2.5 km apart. The Institute of Advanced Motorists and Metropolitan Police have expressed their concerns during the consultation process, vehicle recovery organisations oppose the designs, and Highways England's own safety estimates show they are	**Safety:** The Scheme will deliver the additional capacity required, without compromising safety. The Hazard Log report, Annex E of the Engineering and Design Report (Application Document Reference 7.3), outlines the hazard analysis work undertaken and leads to the conclusion that, the All Lane Running ("ALR") design of the Scheme is likely to be no worse in terms of safety performance than the baseline for the M4 without the Scheme in place. On a conventional motorway, vehicles should only stop on the hard shoulder if there is an emergency, such as a breakdown. On

		not as safe as the original 'Managed Motorways' that only used the hard shoulder at peak times, and with lower speed limits. Compared with a baseline 3-lane motorway with hard shoulder and no Smart technology: • Managed Motorways were found to be 56% safer in overall risk • Smart Motorways are estimated at only 15-18% safer If Highways England were to follow the duty of care obligation to follow good practice they would implement this scheme as a 'Managed Motorway' without all-lane running.	the Scheme, such vehicles will be able to stop in an emergency refuge area ("ERA"). An ERA is safer than the hard shoulder and, in most cases, it is to be expected that a vehicle could reach an ERA. The average spacing between ERAs will be 1.14 miles (1.85 km) as detailed in section 2.2 of Annex E of the Engineering and Design Report. This is within (i.e. more frequent and hence more accessible than) the 2.5 km maximum spacing outlined with the Smart motorways ALR design standard, which takes account of safe design and is set out in Interim Advice Note (IAN) 161/13. Evidence supporting IAN 161/13 – 'An Evaluation of the provision of refuge area' supports the view that many road users will still be able to stop in a refuge area in an emergency, even if the distance between ERAs were to be increased to the design standard. Discretionary stops, which are current, illegal stops on the hard shoulder, will also be significantly reduced as road users are more likely to only stop in an emergency. When the Scheme is operational, it is expected that the frequency of breakdowns in live lanes will be substantially less than the existing frequency of breakdowns on the hard shoulder, as a significant proportion of breakdowns will be able to get to an ERA. Other schemes, such as the M42 Pilot scheme found breakdowns approximately halved. This is detailed in 9.4.4 of the Engineering and Design Report. Although the Scheme slightly increases the risk of live lane stoppages, Highways England have control measures in place to mitigate against this risk, such as the implementation of a controlled environment through Variable Mandatory Speed Limits and Closed Circuit Television ("CCTV"). If an incident does occur Highways England can protect the area through the setting of signs and signals and the use of the full CCTV coverage to manage an efficient response. Consequently, a number of current motorway risks, such as collisions, are expected to reduce as a result of the implementation of ALR (see paragraph 10.3.6 of the Engineering and Design Report which

			compensates for the increase in risk for stopping in a live lane. Highways England are working closely with the emergency service providers to ensure that any initial concerns that they have are addressed accordingly. Lessons learned from the M25 ALR schemes are being shared with the “M4 J3-12” scheme and it is intended that any best practice will be integrated into the Regional Operating Agreement ("ROA") which is being developed with the emergency services on the M4. This agreement has been introduced to cover the management of the partnership between Emergency Services and the Highways England, and specifically, partnership working in relation to incident detection, incident verification, incident access and initial incident response. The current Institute of Advanced Motorists Policy for smart motorways shows that they are in support of the smart motorway concept. The policy states 'The IAM support SMART motorways, studies show most drivers like them and they reduce congestion flow without jeopardising safety' (Ref: http://iam.org.uk/policymanagedmotorways). The original Managed Motorway design (the M42 Pilot) suggests a 60% reduction in safety risk compared to the baseline (reference Annex E of the Engineering and Design Report (Application Document Reference Number 7.3)). However, the original design was more costly, visually intrusive, resource intensive and provided less journey time benefits than the design proposed for the M4 J3-12 scheme, which has been shown by the hazard log assessment not to compromise safety.
		3. Increase in carbon emissions Calculated at more than 4 million extra tonnes.	**Carbon:** The assessment for the Scheme has calculated that carbon dioxide ("CO2") emissions will increase by approximately 4 million tonnes over the 60 year appraisal period following the approach described in the Department for Transport’s ("DfT") Appraisal Guidance (WebTAG). The modelled increases in CO2 attributable to the Scheme have

			been considered in line with the requirements of the National Policy Statement for National Networks ("NN NPS") (Environmental Statement, Chapter 6, paragraph 6.18.1 to 6.18.10 (Application Document Reference 6.1)). Paragraphs 5.17 and 5.18 of the NN NPS state: 5.17 For road projects applicants should provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets"; and 5.18 Determine whether it would have a material impact on ability of the Government to meet its carbon reduction targets. Where the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets, then it should refuse development consent." In line with the requirements of paragraph 5.17 of the NN NPS the increase in CO2 attributable to the Scheme has been shared with DfT for comparison against the National Carbon Plan. DfT has advised Highways England that, when taken together with the Department's wider strategy on carbon reduction, including the Government's commitment for almost every car and van to be zero emission by 2050, the increase attributable to the Scheme should not have a material impact on the Government's ability to meet its carbon reduction target. Highways England is working to support the Government's Plan by the implementation of measures such as installing charging points along the network, investigating solar panel provision and assessing the feasibility of Ultra Low Emission Vehicles in the traffic officer fleet. Further, the M4 Junctions 3 - 12 Scheme, along with all schemes in the Spending Review programme and Road Investment Strategy, is included within the Government's National Carbon Plan. The measures developed by Government to deliver the National Carbon Plan targets take into account any changes in carbon associated with the Scheme as part of the wider

			programme of schemes at the national scale. In summary, the Scheme will not affect the ability of the Government to meet its carbon reduction targets (Environmental Statement, Chapter 6, paragraph 6.18.9 (Application Document Reference 6.1).	
		4. Clear benefits and reduced costs of alternatives These include the simple alteration of putting in 'Smart' technology either a) with no hard shoulder running at all or b) with hard shoulder running only at peak times. These options would bring clear safety benefits and, without widening, cost less. Both would create less traffic, air pollution, noise and carbon than the proposed scheme.	**Alternatives:** The operational scheme options considered for the Scheme are detailed in Table 4, Paragraph 5.1.11 of the Engineering and Design Report (Application Document Reference 7.3) which also notes that "The four operational regime options and design concepts were identified (Table 4), developed and reviewed, by the Highways England based on the knowledge gained from delivering Managed Motorway schemes and incorporating the latest emerging concepts." This Scheme options assessment concluded that the smart motorway solution proposed for the M4 is the most suitable option for this stretch of motorway and provides greater benefits than other modal solutions and existing technology. It allows Highways England to deliver the additional capacity that is required to tackle congestion by making best use of the available road space.	
		The relative costs and benefits of these options must be assessed.	These options were assessed in 2011, as part of Highways England's early scheme development work to identify the best option for the Scheme, with the conclusion that the current Scheme was the best option to take forward.	
		Other investments that would improve conditions for drivers without the harms outlined above include: • improving public transport services and priority along the motorway	Even with public transport improvements or implementing Smarter Choices Programmes, improvements to the M4 motorway are still required to address the level of demand and the resulting congestion problems in this area. The most effective means of	

			addressing current and future transport-related problems in the Thames Valley was considered in the Thames Valley Multi Modal Study ("TVMMS") (see the Planning Statement (Application Document Reference 7.1, paragraph 3.1.3). The Planning Statement (paragraph 3.1.11) states 'that consideration was given to a range of potential multi-modal interventions (as set out in Government transport policy) to address the transport problems within the Thames Valley'. It also notes (paragraph 3.1.13) that the proposed 'strategy recognised that even with travel demand management and public transport enhancements in place, the overall magnitude of car-based demand would remain higher than now and that 'congestion will remain and, in specific areas, may intensify significantly, eroding some of the wider benefits delivered by a wider strategy. Rail developments, including Crossrail and improvements to train capacity and frequency and other improvements to public transport are taken into account within the traffic model for the Scheme, as described in section 3.1.2 of the Traffic Forecasting Report (which is provided at Appendix 1 to Document 3 submitted at Deadline I - Response to Relevant Representations). Consideration of transport demand across modes within the forecasts has enabled the optimum transport solution to be developed which will address congestion on this section of motorway.
		• implementing Smarter Choices programmes in surrounding cities and towns, reducing the number of short journeys on the motorway Highways England now has dedicated funds for integration with public transport. These measures should be employed on the M4 before any new	

		capacity is considered. 5. Impact on landscape and biodiversity As the M4 does not have a continuous hard shoulder, the Scheme entails a significant amount of new works, increasing the road's footprint on the landscape. It is hard to see how widening the road and disrupting the ecology of the surrounding land is compatible with Highways England's new Biodiversity Action Plan.”	Given that there was an identified need to improve the M4 motorway, as explained above, a range of options were investigated by Highways England as detailed in Section 5 of the EDR (Application Document Reference 7.3). The All Lane Running scheme taken forward made best use of the existing road infrastructure, thereby limiting the adverse impacts associated with adding lanes to the motorway. As stated in paragraph 9.4.3 of the ES (Application Document Reference 6.1), only small amounts of land within the Order limits will be permanently lost. There will be no permanent land take from designated sites or for habitats above those valued at the local level. As stated in paragraph 9.4.21 of the ES (Application Document Reference 6.1), in general, the soft estate is narrow, extending only a few metres from the toe of the hard shoulder to the highway boundary fence. However, some wider sections do exist, in particular, around junctions and bridges. The majority of the habitats are considered to be of no more than local value. As stated in paragraph 9.4.22 of the ES (Application Document Reference 6.1), vegetation removal within the Order limits will be minimised as far as possible and areas that are not cleared will be fenced off to prevent accidental incursions by construction plant. These include fencing to exclude incursions into the Root Protection Areas of trees as per BS 5837:2012, including those that lie immediately outside of the Order limits. Furthermore, as stated in paragraph 9.4.24 of the ES (Application Document Reference 6.1), land cleared of vegetation for temporary construction works will be replanted following construction. These will be native species appropriate to the local area, as illustrated

			in the Environmental Masterplan (Annex A of the Engineering and Design Report) (Application Document Reference 7.4). As stated in paragraph 9.4.117, due to the small land take required for the Scheme, opportunities for enhancement measures are limited. However, in compliance with national policy including the National Networks National Policy Statement, and in compliance with Highways England's new Biodiversity Action Plan, opportunities for ecological enhancement have been sought to maximise the biodiversity benefits of the Scheme, as follows: • Any reinstatement of vegetation on the affected verges will include reseeding with an appropriate native wildflower seed mix and only native species will be used in any landscape planting. The removal of invasive species to prevent spread during construction could also result in a beneficial effect (paragraph 9.4.118 of the ES (Application Document Reference 6.1)); • The Environmental Masterplan will incorporate native tree planting in any re-instatement of woodland, with an emphasis on fruit bearing varieties in areas identified as supporting foraging mammals and birds (paragraph 9.4.119 of the ES (Application Document Reference 6.1)); • The Environmental Masterplan will incorporate the installation of otter ledges on culverts or under bridges where no ledge is currently present, in accordance with DMRB Volume 10 Section 4 Part 4. This will ensure improved habitat connectivity for otters (and water vole) beneath the Scheme and allow for adaptation to climate change (9.4.121 of the ES (Application Document Reference 6.1)); • The Environmental Masterplan will incorporate the provision of approximately 60 bat boxes at suitable locations. A variety of boxes will be used to support a

			variety of species (9.4.122 of the ES (Application Document Reference 6.1)). This will increase the available number and type of potential roosting sites for bats within the local area, including the new provision of potential hibernation sites (paragraph 9.4.123 of the ES (Application Document Reference 6.1)); and • For nesting birds, approximately 40 bird boxes will provide a variety of additional nesting opportunities and will be erected on trees at appropriate locations to be determined by an ecologist (paragraph 9.4.124 of the ES (Application Document Reference 6.1)). Mitigation and enhancement measures will progress with detailed design and the development of the final Construction Environmental Management Plan, an outline of which is provided with the Application (Appendix 4.2A of the ES) (Application Document Reference 6.3). Highways England has therefore pursued an option which minimises disruption to ecology, which is compatible with Highways England's new Biodiversity Action Plan.
244	Friends of the Earth, England Wales and Northern Ireland (No specified location)	"We object to the "all lane running" proposals. Widening the road though permanent running of the hard shoulder will increase traffic on the motorway itself and on surrounding roads. This will lead to increases in CO2, air, noise and light pollution.	There will not be a widening of the road as a result of the Scheme. However, additional capacity is created by conversion of the hard shoulder to provide all lane running. **Traffic:** There will be a slight increase in traffic as a result of the Scheme. Table A-5 within Appendix A of the Traffic Forecasting Report (which is provided at Appendix 1 to Document 3 submitted at Deadline I - Response to Relevant Representations) provides details of the total amount of trips forecast in the Do Minimum (without Scheme) and Do Something (with Scheme) for the opening year (2022) and the design year (2037). The difference between the results of the Do Minimum and Do Something scenarios represents the amount of 'induced' traffic arising from

			the implementation of the Scheme. As shown in Table A-5, the overall levels of induced trips, relative to the Do-Minimum scenario, are less than 0.3 % in all time periods in both forecast years. Over a 12 hour day, the level of induced traffic would equate to some 6,500 additional trips out of a total of 465,000 or 0.14%. Consequently, this small increase in traffic which is expected as a result of the Scheme will not out-weigh the improvements in congestion that will result from the Scheme. **Air Quality and Carbon Emissions:** Whilst there will be a slight increase in air pollution as a result of the Scheme, the overall assessment of effects indicates that air quality effects are not significant, along the length of the Scheme and on the local road network. Further detail on the air quality assessment, which has been undertaken for the Scheme, is provided below. **Noise:** The Scheme does not result in an increase in noise pollution. The forecast impacts of the mitigated Scheme are mostly beneficial. The noise and vibration assessment for the Scheme is provided in Chapter 12 of the Environmental Statement (Application Document Reference 6.1) (along with Appendices 12.1 to 12.5 and Drawings 12.1 to 12.6). The changes in noise levels within the Scheme study area for the opening year are provided in Drawing 12.4 Sheets 1 to 16 of the Environmental Statement, which demonstrate that the Scheme is expected to result in negligible / minor noise reductions along the Scheme and on local roads. **Light:** The Scheme is anticipated to have a neutral significance of effect

			on the local landscape as a result of light pollution. The landscape and visual amenity impact of light pollution from the Scheme has been assessed as part of Chapter 8 of the ES (Application Document Reference 6.1). The presence of existing road lighting, and illuminated signs and gantries, has been taken into account in establishing the night-time characteristics of the Scheme location, in terms of relative brightness or darkness. The implications of the Scheme (including proposed road lighting, and illuminated signs and gantries) for the night-time characteristics has then been assessed. A neutral significance of effect is anticipated as a result of the Scheme, principally because road lighting will be retained at its current locations and no new road lighting will be introduced (see paragraph 8.2.11). In addition, where road lighting is required existing lighting will be removed and replaced with modern light emitting diode ("LED") lighting, with a central management control system (see paragraph 6.3.44 of the EDR).
		We object for the following key reasons: Increase in carbon emissions The projected increase of more than 4 million extra tonnes of carbon dioxide over 60 years does not fit with the UK's commitments to reduce carbon dioxide emissions by 80% by 2050 as set out in the Climate Change Act 2008. This is a relevant matter with regard to section 104 (5) and 104 (7) of the Planning Act 2008. We request an Issue Specific Hearing on this matter.	**<u>Carbon Emissions:</u>** The assessment for the Scheme has calculated that carbon dioxide ("CO2") emissions will increase by approximately 4 million tonnes over the 60 year appraisal period following the approach described in the Department for Transport's ("DfT") Appraisal Guidance (WebTAG). The modelled increases in CO2 attributable to the Scheme have been considered in line with the requirements of the National Policy Statement for National Networks ("NPS NN") (Environmental Statement, Chapter 6, paragraph 6.18.1 to 6.18.10 (Application Document Reference 6.1)). Paragraphs 5.17 and 5.18 of the NN NPS state: 5.17 For road projects applicants should provide evidence of the

			carbon impact of the project and an assessment against the Government's carbon budgets"; and 5.18 Determine whether it would have a material impact on ability of the Government to meet its carbon reduction targets. Where the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets, then it should refuse development consent." In line with the requirements of paragraph 5.17 of the NN NPS the increase in CO2 attributable to the Scheme has been shared with DfT for comparison against the National Carbon Plan. DfT has advised Highways England that, when taken together with the Department's wider strategy on carbon reduction, including the Government's commitment for almost every car and van to be zero emission by 2050, the increase attributable to the Scheme should not have a material impact on the Government's ability to meet its carbon reduction target. Highways England is working to support the Government's Plan by the implementation of measures such as installing charging points along the network, investigating solar panel provision and assessing the feasibility of Ultra Low Emission Vehicles in the traffic officer fleet. Further, the M4 Junctions 3 - 12 Scheme, along with all schemes in the Spending Review programme and Road Investment Strategy, is included within the Government's National Carbon Plan. The measures developed by Government to deliver the National Carbon Plan targets take into account any changes in carbon associated with the Scheme as part of the wider programme of schemes at the national scale. In summary, the Scheme will not affect the ability of the Government to meet its carbon reduction targets (Environmental Statement, Chapter 6, paragraph 6.18.9 (Application Document Reference 6.1).

		Increase in air pollution The Air Quality Directive (2008/50) imposes binding emissions limits values on Member States in relation to nitrogen dioxide. The Supreme Court judgement against the UK Government in March 2015 means that the UK must set out measures that enable delivery on obligations on air quality as soon as possible. New schemes which would lengthen the time taken to meet these commitments, or make it impossible to achieve standards of Air Quality should not be approved.	**Air Quality:** The assessment undertake for the Scheme has identified that there is a low risk of the Scheme causing any delays in the dates that zones affected by the Scheme become compliant with EU Limit Values. The compliance of the UK with respect to the EU Limit Values within the ambient air quality directive is reported to the EU by the Department for Environment, Food and Rural Affairs ("Defra"). In particular the compliance of the UK is reported for a number of zones which cover different parts of the country using the Pollution Climate Model ("PCM"). An assessment of the risk that the Scheme would delay the compliance of any zones affected by the Scheme has been undertaken. The assessment has been based on Highways England guidance presented in Interim Advice Note ("IAN") 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'. On the basis of the above, the Scheme would not interfere with the requirement of the UK to prepare a revised air quality action plan to bring the UK back in to compliance with the ambient air quality directive. Therefore there are no specific implications for the Scheme.
		The scheme would currently lead to some locations having air pollution above the legal limits set by the Air Quality Directive. Some locations will breach limits as a result of the Scheme and there will be worsening of pollution in areas that would breach limits without the Scheme. This is a	As noted above, whilst there will be a slight increase in air pollution as a result of the Scheme, the overall assessment of effects indicates that air quality effects are not significant, along the length of the Scheme and on the local road network. The methodology for determining the local air quality study area is prescribed by the Design Manual for Roads and Bridges ("DMRB") Volume 11, Section 3, Part 1 'Air Quality' (HA207/07) (Ref 6.1) and associated Interim Advice Notes ("IANs") (Ref 6-2,

		relevant matter with regard to section 104 (7) of the Planning Act 2008. We request an Issue Specific Hearing on this matter to enable expert testimony.	6-3 and 6-4 detailed in chapter 18 of the ES) and set out in 6.2.31, bullet points a) through to e). These criteria are used to identify whether significant changes in air quality are likely. If a criterion is not met or exceeded, then a significant change in air quality is not anticipated. Where these criteria have been met, sensitive receptors on those roads have been assessed. Increases in traffic along the motorway network, such as the Scheme route, have also been assessed. The overall operational assessment of significance of the Scheme is set out in paragraph 6.15.16 and Tables 6.21 and 6.22 of the ES. This overall assessment of significance indicates that air quality effects are not significant.
		Increase in noise pollution Noise has significant health impacts, particularly night time noise as recognised by Government planning policy. The increase in traffic will lead to an increase in noise. We request an Issue Specific Hearing on this matter.	**Noise:** The noise impacts resulting from the Scheme have been addressed above. Further, the health effects of the Scheme have been considered and no adverse health effects are predicted to arise as a result of the noise effects of the Scheme.
		Safety of road users The proposal to permanently run the hard shoulders as lanes with short safety refuges is of concern. Highways England's safety estimates for Smart Motorways show they are not as safe as the original 'Managed Motorways' that only use the hard shoulder at peak times. We request an Issue Specific Hearing on this matter.	**Safety:** The Scheme will deliver the additional capacity required, without compromising safety on Highways England's motorway. The Hazard Log report, Annex E of the Engineering and Design Report (Application Document Reference 7.3), outlines the hazard analysis work undertaken and leads to the conclusion that, the All Lane Running ("ALR") design of the Scheme is likely to be no worse in terms of safety performance than the baseline for the M4 without the Scheme in place. On a conventional motorway, vehicles should only stop on the hard shoulder if there is an emergency, such as a breakdown. On the Scheme, such vehicles will be able to stop in an emergency

			refuge area ("ERA"). An ERA is safer than the hard shoulder and, in most cases, it is to be expected that a vehicle could reach an ERA. The average spacing between ERAs will be 1.14 miles (1.85 km) as detailed in section 2.2 of Annex E of the Engineering and Design Report. This is within (i.e. more frequent and hence more accessible than) the 2.5 km maximum spacing outlined with the Smart motorways ALR design standard, which takes account of safe design and is set out in Interim Advice Note (IAN) 161/13. Evidence supporting IAN 161/13 – 'An Evaluation of the provision of refuge area' supports the view that many road users will still be able to stop in a refuge area in an emergency, even if the distance between ERAs were to be increased to the design standard. Discretionary stops, which are current, illegal stops on the hard shoulder, will also be significantly reduced as road users are more likely to only stop in an emergency. When the Scheme is operational, it is expected that the frequency of breakdowns in live lanes will be substantially less than the existing frequency of breakdowns on the hard shoulder, as a significant proportion of breakdowns will be able to get to an ERA. Other schemes, such as the M42 Pilot scheme found breakdowns approximately halved. This is detailed in 9.4.4 of the Engineering and Design Report. Although the Scheme slightly increases the risk of live lane stoppages, Highways England have control measures in place to mitigate against this risk, such as the implementation of a controlled environment through Variable Mandatory Speed Limits and Closed Circuit Television ("CCTV"). If an incident does occur Highways England can protect the area through the setting of signs and signals and the use of the full CCTV coverage to manage an efficient response. Consequently, a number of current motorway risks, such as collisions, are expected to reduce as a result of the implementation of ALR (see paragraph 10.3.6 of the Engineering and Design Report which compensates for the increase in risk for stopping in a live lane.

			The original Managed Motorway design (the M42 Pilot) suggests a 60% reduction in safety risk compared to the baseline (reference Annex E of the Engineering and Design Report (Application Document Reference Number 7.3)). However, the original design was more costly, visually intrusive, resource intensive and provided less journey time benefits than the design proposed for the M4 J3-12 scheme, which has been shown by the hazard log assessment not to compromise safety.
		Alternatives to meet objectives We believe more work should be carried out to assess alternative options to meet the aims of this scheme – such as traffic reduction programmes through personal travel planning schemes and improved public transport services. We recommend limiting the Scheme to those aspects of 'Smart' technology which do not include use of an extra lane. These alternatives must be properly examined through an Issue Specific Hearing.	**Alternatives:** The operational scheme options considered for the Scheme are detailed in Table 4, Paragraph 5.1.11 of the Engineering and Design Report (Application Document Reference 7.3) which also notes that "The four operational regime options and design concepts were identified (Table 4), developed and reviewed, by the Highways England based on the knowledge gained from delivering Managed Motorway schemes and incorporating the latest emerging concepts." This assessment concluded that the smart motorway solution proposed for the M4 is the most suitable option for this stretch of motorway and provides greater benefits than other modal solutions and existing technology. It allows Highways England to deliver the additional capacity that is required to tackle congestion by making best use of the available road space. These options were assessed in 2011, as part of Highways England's early scheme development work to identify the best option for the Scheme, with the conclusion that the current Scheme was the best option to take forward. Even with public transport improvements, and other measures such as traffic reduction programmes, improvements to the M4 motorway are still required to address the level of demand and the resulting congestion problems in this area. The most effective means of addressing current and future transport-related problems in the Thames Valley was considered in the Thames

			Valley Multi Modal Study ("TVMMS") (see the Planning Statement (Application Document Reference 7.1, paragraph 3.1.3).
		We would like the preliminary meeting to take place at a time and place that ensures that those who work can attend, and that is accessible to those who only have access to public transport. We would like to appear at an open floor hearing in addition to the Issue Specific Hearings as above."	