national highways

Lower Thames Crossing

9.53 Comments on WRs Appendix G – Parish Councils, Organisations and Groups

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Appendix G – Parish Councils, Organisations and Groups

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REP1-221 CPRE Essex

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REP1-221	CPRE Essex	**WR:** WR link: **REP1-221**
		WR Extract: **i) Congestion reduction** 2.2 The original justification for the delivery of the LTC was to relieve congestion and air pollution at the existing Dartford Crossing. However, Thurrock District Council's modelling has revealed that the reduction in traffic at the Dartford Crossing would be as low as 4% at peak times, thereby not satisfactorily addressing the existing problems of congestion, air pollution and delays. Additionally, the project's own model suggests that any advantages to the existing crossing will disappear within fifteen years, thereby raising significant concerns about its long-term viability and sustainability.
		Applicant's response to paragraph 2.2: Thurrock Council has made public statements about its interpreted performance of the Dartford Crossing. Although the Council has not been clear how it has calculated the figures in its claims, the source of the data or what year it relates to, it appears the Council is comparing traffic levels which used the Dartford Crossing in 2016, with those predicted to use the crossing in 2045. In doing so, the Council has assumed there will be no increase in traffic using the Dartford Crossing for nearly 30 years. Traffic levels are already higher than they were in 2016. If the Lower Thames Crossing is not built, in 2045 traffic levels using Dartford are expected to be 13% higher in the AM peak and 27% higher in the PM peak than they were in 2016. Traffic levels are already above the theoretical capacity of the Dartford Crossing, which carries around 150,000 vehicles a day and 180,000 on some of the busiest days. In the opening year as assessed in the DCO Application (2030) the Applicant's traffic modelling shows that traffic levels on the Dartford Crossing are predicted on average to fall by around 19%, with a 17% reduction in the AM peak and a 21% reduction in the PM peak. Even after the road has been open for 15 years, traffic levels using the Dartford Crossing are still predicted on average to fall by 14%, and by 9% in the AM peak and 17% in the PM peak. These figures compare predicted traffic levels in 2030 and 2045; they do not compare traffic levels with 2016. The Applicant has never claimed that traffic levels using the Dartford Crossing will remain the same in 2045 as they were in 2016; however, it appears that is what the Council is inferring. While the Applicant agrees that the forecasts show that traffic levels at the Dartford Crossing will increase as a result of traffic growth, benefits to the operation of the Dartford Crossing are forecast to remain. The Applicant provided

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		further detail on this matter in Annex A.2 of Post-event submissions, including written submission of oral comments, for ISH1 [REP1-183].
		WR Extract: 2.3 It is incredible that the Port of Dover is not connected by rail. 70% of goods in and out of the Port of Dover use the Dartford Crossing and around 42% of traffic using the Dartford Crossing is goods vehicles. We question, therefore, why the focus of the LTC is predominantly on road freight with no proper consideration given to modal shift and, in particular, rail alternatives.
		Applicant's response to paragraph 2.3 The Applicant provided a response to this matter in Annex B.2 of Post-event submissions, including written submission of oral comments, for ISH1 [REP1-183]. Annex B.2 of Post-event submissions, including written submission of oral comments, for ISH1 [REP1-183], addresses the Applicant's consideration of the role that other transport modes, including rail, might play in addressing congestion at the Dartford Crossing. It explains that a new road crossing of the River Thames is considered to be the only feasible and deliverable option to relieve the congested Dartford Crossing.
		WR Extract: 2.4 Cheaper, better and more sustainable rail improvement alternatives would better serve the ports in the South East through to the Midlands and beyond as well as reducing congestion on the existing road network. There are practical solutions that could be made to get HGV traffic onto rail, which a concerted national transport policy approach could promote and which would actually improve environmental outcomes.
		Applicant's response to paragraph 2.4 The Applicant provided a response to this matter in Annex B.2 of Post-event submissions, including written submission of oral comments, for ISH1 [REP1-183].
		WR Extract: **ii) Induced traffic growth** 2.5 It is well documented that new roads generate additional traffic, rather than alleviate congestion. It is concerning, therefore, that the scheme appraisal did not take account of the effect of the road in stimulating car-based development and the resulting likely congestion on the new road and feeder roads arising as a result of additional vehicle movements. We have major concerns that the LTC will encourage increased car dependency and generate induced traffic. At the same time it will cause serious environmental damage, adversely impacting on biodiversity and increasing CO2 emissions which contribute to climate breakdown.

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		Applicant's response to paragraph 2.5 The creation of new capacity on the road network will lead to changes in the way people travel. Some people will choose to make different journeys because shorter or less congested routes become available, and some people who would not previously have travelled will choose to make new journeys because the faster or shorter journey becomes more affordable. As a result, there will be changes in the lengths of journeys made, and in the total number of journeys made. The net increase in kilometres driven is highest in the PM peak hour, with an overall increase of 1.1% in 2030 and 1.23% in 2045. Further information is provided in section A.3 New and longer trips in Annex A of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**].
		WR Extract: 2.6 This contradicts the Government's own target set in the Environment Act 2021 to halt the decline in species abundance by 2030, and the commitment to reach net zero by 2050, including a pathway that requires 78% reduction in emissions by 2035.
		Applicant's response to paragraph 2.6 The Project is setting out an industry leading position in terms of driving out carbon in the preliminary design and setting a framework to continue to reduce its carbon impact through the commitments made in the Carbon and Energy Management Plan, which is one of three documents addressing carbon reduction in the Development Consent Order (DCO) application. Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**] states that '*the Project represents a step change in approach for a road scheme of this scale, in terms of the scope and nature of the measures which the Applicant is committing to deliver to reduce emissions during the construction and operation of the new road. Together with the policies which the Government has set out in its Decarbonising Transport Plan (2021), these measures ensure that the Project is aligned with a trajectory to net zero and that the Project's emissions would not therefore be significant, in accordance with relevant guidance.*' • Carbon and Energy Management Plan [**APP-552**] • Environmental Statement (ES) Chapter 15: Climate [**APP-153**]
		WR Extract: 2.7 New roads should be considered only as a last resort and as part of a sustainable transport strategy, which should be strategically planned and fully integrated with conservation objectives and the land use planning process. This should prioritise environmentally sensitive maintenance and improvement of the current road network over new

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		road schemes. Fundamentally, it should seek to reduce the need to travel and minimise dependency on private vehicle use in order to reduce traffic levels, fuel consumption and vehicle emissions.
		Applicant's response to paragraph 2.7 Chapter 3 of Need for the Project [**APP-494**] demonstrates how the strategic need for the Project has been recognised and identified in national, regional and local level policy documents. It sets out the need for development in accordance with the National Policy Statement for National Networks (NPSNN), the Government's policy and strategic vison and objectives. The Scheme Objectives set out in Table 4.1 of the Planning Statement [**APP-495**] include relieving the congested Dartford Crossing and its approach roads, improving their performance by providing free-flowing north–south capacity, improving the resilience of the River Thames crossings and the major road network, and improving safety.
		WR Extract: **iii) Climate impacts** 2.8 The construction and subsequent use of the scheme will have a significant carbon impact, increasing CO2 emissions, which contribute to climate breakdown. Air pollution levels at junction interchanges are likely to be particularly high in peak times resulting from congestion issues.
		Applicant's response to paragraph 2.8 ES Chapter 15: Climate, contains a thorough examination of the significance of the emissions arising from the construction and operation of the Project. The report concludes that the emissions from construction and operation are not significant when compared to the UK's national carbon budgets, or in relation to the IEMA method for determining emissions significance. The Project is intended to reduce emissions from congestion at Dartford and the traffic analysis shows this will be the case (see the Combined Modelling and Appraisal Report [**APP-518**]).
		WR Extract: 2.9 Last month's Climate Change Committee (CCC) report has called for an urgent and systematic review of all current and future road building in England in order for the government to meet its own carbon budget delivery plan. This highlighted the importance of coherence across Government decisions, that issues need dealing with now, and we cannot be locking in problems now that will make it harder to solve the issues in the long term. We agree and call for an urgent review into current and future road building and that all projects should, at the very least, be paused immediately until such a review has taken place. It is essential that this happens now and that no further road projects are progressed in the meantime.

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		Applicant's response to paragraph 2.9 The Applicant awaits the UK Government's response to the recommendations set out in the Climate Change Committee's progress report to Parliament, published on 28 June 2023 and will continue to support the Department for Transport (DfT) in decarbonising the transport sector. The Applicant has set out its own pathway to supporting the DfT's decarbonisation of the surface transport sector through the publication of its 2021 plan Net Zero highways: Our 2030, 2040 and 2050 plan. It is noted that Decarbonising Transport - A Better, Greener Britain (DfT, 2021) states that '*Continued high investment in our roads is therefore, and will remain, as necessary as ever to ensure the functioning of the nation and to reduce the congestion which is a major source of carbon*'. The Project is considered vital to reduce congestion on the busiest part of the strategic road network. Refer to Need for the Project [**APP-494**].
		WR Extract: 2.10 Evidence shows that new road projects are not conducive to a sustainable future and we contend that it's now urgently important that transport policy must reflect the climate and ecological emergencies and incentivise lower carbon forms of transport. Hugely destructive and harmful projects - like the proposed LTC - are not sustainable. Rather, promoting a modal shift is critical for a sustainable future.
		Applicant's response to paragraph 2.10 Details of why the Project is justified can be found in Need for the Project [**APP-494**]. Alternatives to the Lower Thames Crossing were considered in a study in 2009 commissioned by the DfT. The Applicant reconsidered the road and rail public transport solutions in 2017 in response to the public consultation and concluded that while some of the alternative modes could be complementary to a new road crossing of the Lower Thames, none had the capability of solving the identified strategic traffic problem and meeting the Scheme Objectives. Strategic options were revisited as part of the 2022 options reappraisal, which confirmed that the decisions made remain valid. For further details refer to Section 3.6 and Section 3.9 of ES Chapter 3: Assessment of Reasonable Alternatives [**APP-141**].
		WR Extract: **v) Damage to habitats and wildlife** 2.11 Overall, the new road will have a serious detrimental impact on the south Essex landscape. The project will cause considerable harm, impacting visually (e.g. the intrusion of major new infrastructure and road lighting) and physically (e.g. pollution and noise). Serious impact on biodiversity will result from the loss or damage to important habitats (which include designated Local Wildlife Sites) and fragmentation of the habitats that remain, with accompanying impacts on protected and priority species (including ancient woodlands).

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		Applicant's response to paragraph 2.11 Visual effects associated with the Project are assessed in ES Appendix 7.10: Schedule of Visual Effects [**APP-385**]. The visual impact assessment acknowledges there would be significant adverse effects as a result of the Project. However, effects would generally reduce by the design year due to the establishment of proposed mitigation planting, including extensive woodland planting around the A13/A1089/A122 Lower Thames Crossing junction and A122 Lower Thames Crossing/M25 junction, replacement tree and shrub planting along the Project route and areas of ancient woodland compensation planting and woodland mitigation planting. The effects of the Project on terrestrial biodiversity have been assessed within ES Chapter 8: Terrestrial Biodiversity [**APP-146**] and specifically include: • Designated sites, including Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI) and local wildlife sites including Low Street Pit, Blackshots Nature Reserve, Mucking Heath, Rainbow Shaw and Canal and Grazing Marsh Higham Local Wildlife Sites • Areas of ancient woodland and veteran trees • Habitats and species • The effects of habitat loss and fragmentation on ecological receptors ES Chapter 8 describes the magnitude of the impacts, the measures proposed to avoid, reduce, and compensate for the effects and any residual effects on the receptors identified above. These measures include the creation of significant areas of habitat (woodland planting; creation of open mosaic habitat; wetland habitats), the locations of which would act to link up existing similar habitats and areas of high biodiversity interest. These are detailed within ES Figure 2.4: Environmental Masterplan Sections [**APP-159**; **APP-160**; **APP-161**; **APP-162**; **APP-163**; **APP-164**; **APP-165**; **APP-166**; **APP-167**; **APP-168**] and the Design Principles [**APP-516**]. Their long-term management provision is reported within the outline Landscape and Ecology Management Plan [**REP1-173**].
		WR Extract: 2.12 We note that Natural England is progressing the case for a SSSI notification in the Tilbury area and that if the SSSI is notified, the ES may need to be updated to reflect any additional impacts and mitigation measures required.
		Applicant's response to paragraph 2.12 The Project's overall mitigation design, particularly around the provision of open mosaic habitats and its positioning to link existing retained high quality habitats to build resilience into ecological networks, has been developed in discussion with Natural England in an effort to align with their SSSI notification intentions. This is referenced in ES Chapter 8: Terrestrial Biodiversity [**APP-146**], paragraph 8.4.185 which itself refers to the Statement of Common Ground between the Applicant and Natural England [**APP-099**]. The extent of this mitigation provision focuses on

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		addressing potential impacts to specific ecological receptors, including habitats that would support important terrestrial invertebrates and bird assemblages, which is essential mitigation regardless of Natural England's intentions for SSSI notification. The Applicant's engagement with Natural England in this regard has focused predominantly on the location of these habitat creation areas which look to link up existing areas of high quality habitat that are not affected by the Project and thus support coherent ecological networks. To this end, the design of the Project's mitigation along the North Thames Estuary is considered to address the potential adverse effects which would result from its construction and operation. Should Natural England proceed to notify a SSSI in this area, this design would then align with and support, rather than conflict with, the SSSI notification.
		WR Extract: **v) Impact on Green Belt and loss of BMV agricultural land** 2.13 The whole route of the new road is located in the Metropolitan Green Belt. This is particularly disconcerting north of the Thames, given the high proportion of the proposed route that is situated in Essex and the subsequent development pressures that a new road of this type might encourage. 2.14 This project seriously undermines the concept and level of protection normally afforded by Green Belt designation. The NPPF establishes a general presumption against inappropriate development the Green Belt, unless there are very special circumstances. The applicant's case for the "special circumstances" is heavily based on the project's strategic objective of reducing congestion at the Dartford Crossing - however, the longer term likelihood of this is in doubt. It's clear to us, therefore, that far more attention to route selection decisions should have been given to avoiding inappropriate development in the Green Belt.
		Applicant's response to paragraphs 2.13 and 2.14 The Applicant is content that the implications of the Project on Green Belt in policy terms have been considered appropriately in the Planning Statement and that the Project demonstrates Very Special Circumstances that clearly outweigh both definitional and actual harm when compared to such alternatives. The Planning Statement [**APP-495**] and Planning Statement Appendix E: Green Belt [**APP-500**] addresses the effects of the Project on the Green Belt from a policy perspective. ES Chapter 7: Landscape and Visual considers the effects of the Project on the landscape including relevant landscape designations.
		WR Extract: 2.15 Associated to this, the loss of considerable swathes of Best and Most Versatile agricultural land is another key concern. In a time of high food price inflation, food shortages and a greater need for food security, the continuing and rapid loss of high grade farmland at a national and local level does not make any sense and requires more stringent control.

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		Applicant's response to paragraph 2.15 An Assessment of likely significant effects on soil resources is presented in ES Chapter 10: Geology and Soils [**APP-148**]. The assessment concludes that the Project would result in a permanent loss of 539.22ha of Best and Most Versatile Land and in line with the criteria set out in Design Manual for Roads and Bridges LA 109, acknowledges this as a large adverse impact which is significant. The Applicant has taken reasonable and practicable steps to minimise and mitigate for these impacts such that accordance with the National Policy Statement for National Networks (DfT, 2014) is demonstrated. The design has been optimised to minimise the land acquisition required to construct and operate the Project. Through the route optioneering phase and design development, consideration has been given to the presence of higher quality agricultural land alongside other environmental and design constraints. A total of 908.45ha of land would be reinstated by the Project following the completion of construction activities. Where agricultural land cannot be avoided, the Applicant has identified soil management measures to minimise the adverse effects of soil disturbance and handling during the construction phase. These are described in full in ES Chapter 10: Geology and Soils [**APP-148**] and secured through their inclusion in the Register of Environmental Actions and Commitments within ES Appendix 2.2: Code of Construction Practice [**REP1-157**], and include commitments GS009, GS010, GS011, GS012, GS013, GS014 and GS015. Considering the needs and the benefits of the Project against relevant policies within the Planning Statement, there is a clear and overriding need for the Project, the adverse effects of which are outweighed by the benefits as presented in Need for the Project [**APP-494**] and the Planning Statement [**APP-495**].

REP1-222 CPRE Kent

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REP1-222	CPRE Kent	**WR:** WR Link: **REP1-222**
		WR Extract: **1.0 Introduction** 1.1 CPRE Kent welcomed the opportunity to provide oral evidence at the third open floor session held on the 5th of July. However, in recognition that this is a primarily written process, the purpose of our written representation is to expand upon our concerns and provide context to future representations which we may seek to make. 1.2 CPRE Kent is the local branch of the Campaign to Protect Rural England, which is part of national CPRE, the Countryside Charity. Throughout Kent we currently represent 1,450 individual members of which 173 are Parish Councils, local amenity groups and civic societies. 1.3 CPRE Kent is an independent charity that works closely alongside other CPRE branches, as well as the national CPRE organisation. As such the geographic focus of our comments is the southern element of the project. 1.4 It is our objective to retain and promote a beautiful and thriving countryside that is valued by everyone. It is our position that planning decisions should seek to ensure that the impact of development on the countryside, both directly and indirectly, is kept to a minimum and that development is sustainable in accordance with national planning policy. 1.5 CPRE Kent have engaged with the application since its inception, making representations and raising significant objections at each stage of the preapplication process. 1.6 We have been consistently frustrated throughout this process with us finding at each round of consultation we were only being given information in a piecemeal fashion. This denied us and others the opportunity to make fully informed comments ahead of the submission of the DCO. To CPRE Kent, this was a significant and consistent failing of the pre-application consultation process. 1.7 Regrettably it seems that these concerns persist with the submission of the DCO application. In particular, we are concerned that significant detail appears to be being deferred to the post consent stage and that clear impacts outside of order limits are simply not being considered.

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		Applicant's response to paragraph 1.7 The Applicant has a process for the delivery of the detailed design (including the consultation process within it) to ensure that the measures proposed and secured in the DCO will deliver the required objectives. The Applicant has engaged with, and will continue to engage with, relevant stakeholders in developing that process. The Applicant does not agree that 'impacts outside the order limits are simply not being considered'. All ecological impact pathways have been identified and assessed in the Habitats Regulations Assessment Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**] and ES Chapter 8: Terrestrial Biodiversity [**APP-146**], irrespective of whether the impact is within the order limit or not. The pre-application consultation was carried out to the required standard as evidenced in the Consultation Report as ratified by the Planning Inspectorate in accepting the application.
		WR Extract: 1.8 The consequence of this is that the true cost and impact of the scheme is simply not being accounted for. Given we already do not accept that the project will achieve its strategic objective of reducing congestion at the Dartford Crossing, to us it is clear the project will generate more costs, both financially and environmentally, than benefits. 1.9 This is further compounded by the fact the LTC project is so clearly at odds with the UK Governments commitment to achieving Net Zero. That is, with the known carbon emissions already amounting to 6.6 million tonnes, the unknown and unaccounted for emissions will clearly exacerbate this further. 1.10 It is therefore CPRE Kent's overarching view that the true adverse impacts of the proposed development clearly and demonstrably outweigh any of the schemes purported benefits. It is against this context that all comments and observations within this statement are made.
		Applicant's Response to paragraphs 1.8 – 1.10 Chapter 3 of Need for the Project [**APP-494**] identifies the strategic need for the Project in national, regional and local level policy documents. Chapter 6 of the Planning Statement [**APP-495**] assesses the potential benefits and adverse effects of both the construction and operation of the Project to demonstrate accordance with National Policy Statements (NPSs) for National Networks and Energy. Chapter 8 describes the planning balance, which weighs in detail the adverse impacts against the benefits of the Project. It concludes at paragraph 8.7.34 that: '*In light of all of the above, it is the Applicant's view that there is a*

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		clear, overriding and compelling case in the public interest for the Project. Accordingly, the policy presumption in favour of the Project and the overall planning balance lie strongly in favour of the grant of development consent.' The Project is intended to maximise national and local benefits and provide value for money for taxpayers. Achieving value for money is one of the Scheme Objectives and a Value for Money (VfM) assessment has been carried out. As detailed in Need for the Project [**APP-494**] it represents positive value for money as the substantial benefits of the Project outweigh the costs. In relation to the Project's alignment to UK Net Zero policy, Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**] sets out the Applicant's approach to carbon within the DCO application, and demonstrates its alignment with policy. It explains how the Project represents a step change in approach for a road scheme of this scale, in terms of the scope and nature of the measures which the Applicant is committing to deliver to reduce emissions during the construction and operation of the new road. Together with the policies which the Government has set out in its Decarbonising Transport Plan (Department for Transport, 2021a), these measures ensure that the Project is aligned with a trajectory to net zero and that the Project's emissions would not therefore be significant, in accordance with relevant guidance. The Applicant has assessed the potential climate impacts of the Project. ES Chapter 15: Climate [**APP-153**] presents the assessment of the likely significant effects on climate from GHG emissions and the vulnerability of the Project to climate change during the construction and operational phases.
		WR Extract: 2.0 The project will not achieve its strategic objective of reducing congestion at the Dartford Crossing 2.1 We have consistently objected to the principle of a Lower Thames Crossing on the basis that providing additional capacity at the existing Dartford crossing or this location was unacceptable in terms of longer-term induced traffic growth, congestion and reduction in air quality. It remains that we firmly believe that the current proposal fails to achieve its strategic objective of providing additional capacity at the existing Dartford Crossing. 2.2 The existing Dartford Crossing is already operating significantly over capacity. Despite being designed for 135,000 vehicles per day, it is now operating over capacity and is regularly used by over 150,000 vehicles per day. It however is evident that the proposed new crossing will divert only a very small percentage of traffic during peak hours, as low as 4%. We reference Thurrock Council's modelling, which supports this claim and raises doubts about the effectiveness of the project in addressing the congestion issues. 2.3 Even the Lower Thames Crossing project's own model suggests that any advantages brought to the existing Dartford Crossing will disappear within 15 years. This raises concerns about the long-term viability and sustainability of the proposed solution.

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		2.4 A fundamental reason behind the projected failure of the LTC Project is its failure to consider or provide a holistic solution. By way of one example, the scheme is assuming that traffic from Kent going north of London. will divert from the A20/M20 corridor to the A2/M20 corridor. However, as many commentators are pointing out, it is completely ignoring the critical role of the A229 in linking the A2/M2 and M20/A20 corridors and providing relief at Dartford. 2.5 The lack of improvement to the A229 in the application is just one example of improvements that will be necessary if the scheme is to achieve its desired objective. Numerous similar examples could be pointed to elsewhere in Kent, such as the clear need to undertake significant upgrades to the A2 within the Dover District. The point however is that neither the environmental nor financial implications of such upgrades are currently being considered as part of the case which clearly weighs against the scheme. 2.6 In this respect, to CPRE Kent the scheme represents the continued piecemeal and fragmented approach to infrastructure planning which is of clear detriment to communities across the whole of Kent, though in particular those of North Kent and the Medway Towns. With significant housing requirements being placed upon these communities, it is clear to CPRE Kent that an open and cohesive approach to strategic planning is required across all administrative boundaries. 2.7 Furthermore, the LTC project is vastly underestimating the potential negative consequences of increasing road capacity. Building more roads will only perpetuate vehicle dependency and contribute to unsustainable levels of traffic growth. The CPRE report 'The end of the road? Challenging the road building consensus', March 2017 reveals that road-building is failing to provide the congestion relief and economic boost promised, while devastating the environment. There is nothing which we have seen so far to convince us the LTC will do anything but devastate the environment whilst failing to provide congestion relief. 2.8 Moreover, it overlooks the holistic solution required to address the congestion issues effectively while disregarding the government's environmental goals and the long-term sustainability of transportation systems.
		Applicant's response to paragraphs 2.1 – 2.5 The Applicant notes that reference is made to Thurrock Council's modelling, who have made public statements about its interpreted performance of the Dartford Crossing. Although the Council has not been clear how it has calculated the figures in its claims, the source of its data or what year it relates to, it appears the Council is comparing traffic levels which used the Dartford Crossing in 2016 with those predicted to use the crossing in 2045. In doing so, the Council has assumed there will be no increase in traffic using the Dartford Crossing for nearly 30 years. Traffic levels are already higher than they were in 2016. If the Lower Thames Crossing is not built, in 2045 traffic levels using Dartford are expected to be 13% higher in the AM peak and 27% higher in the PM peak than they were in 2016. Traffic levels are already above the theoretical capacity of the Dartford Crossing, which carries around

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		150,000 vehicles a day and 180,000 on some of the busiest days. In the year the road is planned to open, 2030, the Applicant's traffic modelling shows that traffic levels on the Dartford Crossing are predicted on average to fall by around 19%, with a 17% reduction in the AM peak and a 21% reduction in the PM peak. Even after the road has been open for 15 years, traffic levels using the Dartford Crossing are still predicted on average to fall by 14%, and by 9% in the AM peak and 17% in the PM peak. These figures compare predicted traffic levels in 2030 and 2045; they do not compare traffic levels with 2016. The Applicant has never claimed that traffic levels using the Dartford Crossing will remain the same in 2045 as they were in 2016; however, it appears that is what the Council is inferring While the Applicant agrees that the forecasts show that traffic levels at the Dartford Crossing will increase as a result of traffic growth, benefits to the operation of the Dartford Crossing are forecast to remain. The Applicant provided further detail on this matter in Annex A.2 of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**]. **Wider Network Impacts** The Applicant recognises that as a result of the Project opening, people will choose to make different journeys. In many places on the network, and within Kent, this will lead to beneficial impacts on the network, and in some cases will lead to adverse impacts. Overall, the benefits on the road network outweigh the adverse impacts, and this is reflected in the positive economic benefit of the Project. The Applicant has identified the adverse impacts on traffic flows across the Local Road Network, and each of these impacts has been assessed and considered against the requirements set out in the National Policy Statement for National Networks (Department for Transport (DfT), 2014) in Appendix F of the Transport Assessment [**APP-535**]. The Applicant does not believe that the adverse impacts are unacceptable under this policy, and as such is not committing to any direct additional funding for interventions on the wider network through the draft DCO [**REP1-042**]. **A229** Kent County Council (KCC) is currently seeking to undertake a major improvement scheme to the A229. The Applicant has worked collaboratively with KCC on its bid for funding to DfT for works to the A229 and its junctions. This has included modelling scheme design options provided by KCC's consultants in the full Lower Thames Area Model and providing the forecast traffic flows and other outputs, including cordon models to KCC and its consultants. The Applicant has agreed a scope of work and funded this through a Planning Performance Agreement for KCC to undertake a Strategic Outline Business Case study to identify the impacts of the Project on the Kent road network and to assess the business case of potential interventions to optimise the network.

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		The outputs of this study will allow KCC to make informed representations during the DCO examination and will enable KCC to develop more advanced business cases over the course of the next 10 years through existing processes.
		WR Extract: **3.0 Lack of modal shift opportunities.** 3.1 As set out within our oral statement given to the Open Floor Hearing 3 session, CPRE Kent believe that we need to be managing our existing road network better rather than expanding it and that it is not possible to build our way to free-flowing roads. 3.2 Therefore, an as an alternative to the Lower Thames Crossing, we support calls for the government to conduct a systematic review of current and future roadbuilding projects to assess their consistency with environmental goals and ensure that decisions do not lock in unsustainable levels of road traffic growth. 3.3 Key to this is prioritising alternative modes of transport and reducing vehicle dependency. Alternative modes of transport, especially for freight, such as rail, tram or ports of access would help address the, then climate change, and now climate crisis issue. Reducing heavy goods vehicles from Kent will help benefit the county's environment and quality of life for residents. 3.4 With respect to rail, we do not consider there has been a proper consideration of rail as an alternative, particularly with respect to freight trips. Currently, the Dover-Calais Sea route across the English Channel accounts for two thirds of trade between Britain and the European Union. Moving this freight onto rail absolutely needs to be a priority and in our view would bring about significantly greater benefits than the LTC project both in terms of reducing congestion on Kents roads but also for the environment. 3.5 Whilst it is already the case Network Rail are proposing to adapt the line to accommodate some oversea freight from Folkestone to Wembley in north London, via Ashford and Maidstone in Kent, unfortunately this is currently a very modest scheme which would still not accommodate the size of standard European freight containers (W12s). It is however understood that for a very modest additional £40m investment, such containers could be accommodated. Its is CPRE Kents view that surely schemes like this need to be accommodated as a priority over the LTC project. 3.6 With respect to the existing LTC project, we agree with the near unanimous response from the Local Authorities, including Kent and Essex County Council that the lack of public transport provision is a missed opportunity. The fact that the project has not engaged with bus operators demonstrates to CPRE Kent the complete disregard the project gives to the possibility of more sustainable transport options.

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		3.7 Likewise, we agree much more thought needs to be given to how cyclists can get through the tunnel and all cycling infrastructure must be designed to LTN 1/20 standards.
		Applicant's response to paragraphs 3.1 and 3.3 to 3.6 **Rail Alternatives** The Applicant provided a response to the consideration of rail alternatives in Annex B.2 of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**]. **Public transport provision** The Applicant believes that local authorities are best placed to lead on the development and appraisal of future public transport schemes due to their existing relationships and lines of communication with commercial bus operators as part of local transport authority duties. The Applicant is willing to work with and support the local authorities where appropriate. The Applicant has established a Sustainable Transport Working Group in parallel to the Project, with the purpose of maximising the benefits of the new crossing, developing sustainable travel initiatives that could be eligible for the Applicant's designated funds and supporting cases for future investment. Should the Project gain consent, the Applicant will use the Sustainable Transport Working Group up until the Project opening as a forum to engage with local authorities and operators and develop improvements to existing and potential new services to make best use of the opportunities provided by the new crossing. The Applicant considers that supporting this collaboration between local authorities on both sides of the River Thames is the most effective and sustainable solution. The opportunity to provide a link for new bus services across the River Thames between North Kent and Thurrock/South Essex, could provide a significant change in public transport connectivity. The positive impact would extend to the Dartford Crossing which is forecast to see journey time reliability increase, and journey times reduce as a result of the Project. The whole of the Project route is accessible to local and longer distance public transport routes, if operators choose to make use of it. Similarly to the Dartford Crossing, registered local bus services would be exempt from charging when using the new crossing. Bus lanes are not included within the tunnel due to the good overall capacity provided by the three-lane design. Forecast changes to public transport journey times are reported in Section 7.11 of the Transport Assessment [**APP-529**]. These show that overall, the Project would have a benefit to public transport services in the Lower Thames area.

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		Applicant's response to paragraph 3.7 The Applicant has considered various options during the development of the Project to provide improved river crossings for walkers and cyclists. The options investigated included using the tunnel, upgrading the existing ferry, relocating the ferry, building a separate bridge or cable car, and providing a shuttle service through the tunnel. All of these options were not taken forward for reasons including lack of technical feasibility, operational issues, lack of commercial viability, cost and poor safety. The Application includes an extensive set of proposals for the creation of new routes, and upgrades to existing routes for walkers, cyclists and horse riders. All new routes would be designed to the latest standards. The Design Principles [**APP-516**] explain which standards would be applied to new and upgraded WCH routes, in particular clauses PEO.01-PEO.11, PRO.02, STR.05-STR.08, S1.17, S2.02, S2.12, S3.18, S10.09, S10.13, S11.16, S12.08, S12.16-S12.18, S14.04, S14.10, S14.11 and S14.20-S14.23. Clause PEO.04 refers to designing in accordance with Local Transport Note 1/20 (LTN1/20) Cycle infrastructure design.
		WR Extract: **4.0 Climate impacts:** 4.1 The UK Government has committed to ambitious climate targets, including reaching Net Zero Carbon emissions by 2050. These targets are crucial in addressing climate change, mitigating its impacts, and ensuring a sustainable future for generations to come. It is imperative that all government projects align with these targets and actively contribute to their achievement. It is however CPRE Kents view that the LTC project directly contradicts the goal of achieving Net Zero Carbon, making it significantly challenging to reach the targeted carbon reduction levels.
		Applicant's response to paragraph 4.1 The Applicant's approach to carbon emissions reduction is explained in ES Chapter 15: Climate [**APP-153**] and in the innovative Carbon and Energy Management Plan [**APP-552**]. The commitment is to make the Project transformational as a pathfinder project to test low carbon innovation and approaches for the wider construction industry, in line with the Government's decarbonisation strategy. There are 22 commitments in the Carbon and Energy Management Plan that set out ways in which the Project intends to minimise construction emissions and set a new trajectory for carbon reduction for the UK infrastructure construction industry. ES Chapter 15: Climate [**APP-153**], analyses the significance of the emissions arising from the construction and operation of the Project and concludes that the impact is not significant and does not have a material impact on the ability of Government to meet its carbon reduction targets.

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		WR Extract: 4.2 Most obviously, the construction and operation of the LTC project will inevitably lead to a substantial increase in vehicle emissions. As more vehicles utilize the new crossing, additional greenhouse gases, including carbon dioxide (CO2) and nitrogen oxides (NOx), will be emitted into the atmosphere. Whilst the official estimate is that the project would emit 6.6 million tonnes of carbon, it is our view that this is a significant underestimate. Significantly, this estimate does not account for the substantial amount of construction and induced traffic which is to occur from the extensive road construction outside the order limits which would be required as a consequence of the LTC being approved.
		Applicant's response to paragraph 4.2 The Application Documents contain a thorough and comprehensive calculation of the emissions arising from the construction and operation of the Project. Specifically, details of the quantification and assessment of carbon emissions are detailed in ES Chapter 15: Climate [**APP-153**] and the Carbon and Energy Management Plan [**APP-552**], Appendices B, C and D. The traffic and construction carbon models do include emissions arising from any anticipated traffic growth caused by the Project and also from detailed estimates for anticipated construction traffic (see also the Combined Modelling and Appraisal Report [**APP-518**]). The Carbon and Energy Management Plan [**APP-552**] provides a number of commitments that highlights the Applicant's ambitions to continue to be transparent and accountable with regard to its carbon impact. Through paragraph 3.8.5 to 3.8.7 and commitment CBN16, the Applicant has committed to transparency in terms of its carbon quantification. The Applicant has also committed to the publication of annual carbon report to set out its carbon emissions data, an update on progress in meeting the Project's carbon ambitions and key actions and targets for the following year. Carbon data will be independently reviewed prior to publication of the Carbon and Energy Management Plan. Carbon commitment CBN13, CBN 14 and CBN15 commits the Applicant, its Contractors and subcontractors to adopt best practice carbon management through the certification of the PAS2080 (the global standard for managing infrastructure carbon). CBN13 and CBN14 commit to maintaining the certification annually via an independent third party.
		WR Extract: 4.3 Linked and as set out above, induced demand suggests that the construction of new road infrastructure tends to generate more traffic. The LTC project, by providing additional capacity, will likely attract more vehicles to the area,

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		leading to increased traffic volume and associated emissions. This induced traffic demand undermines efforts to reduce carbon emissions and hampers progress towards Net Zero Carbon targets.
		Applicant's response to paragraph 4.3 The Applicant has considered the impact of the Project against the UK carbon budgets to enable the decision maker to determine whether the Project's GHG emissions would have a material impact on the Government's ability to meet its carbon reduction targets (which are set out in the national carbon budgets under the Climate Change Act 2008). An assessment of the Project's GHG emissions is presented in Section 15.6 of ES Chapter 15: Climate [**APP-153**]. This is not limited to an assessment against the national budgets, but also includes a contextualisation in terms of alignment with the net zero trajectory as per the Institute of Environmental Management & Assessment (IEMA) guidance 'Assessing greenhouse gas emissions and evaluating their significance' (IEMA, 2022). ES Chapter 15: Climate [**APP-153**] demonstrates that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets and that, in line with the IEMA guidance: 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' the Project is compatible with the budgeted science-based 1.5°C trajectory (in terms of rate of emissions reduction) and both complies with and exceeds up-to-date policy and 'good practice' reduction measures. The Project would put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets. The creation of new capacity on the road network will lead to changes in the way people travel. Some people will choose to make different journeys because shorter or less congested routes become available, and some people who would not previously have travelled will choose to make new journeys because the faster or shorter journey becomes more affordable. As a result, there will be changes in the lengths of journeys made, and in the total number of journeys made. The net increase in kilometres driven is highest in the PM peak hour, with an overall increase of 1.1% in 2030 and 1.23% in 2045. Further information is provided in section A.3, New and longer trips, in Annex A of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**].

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		WR Extract: 4.4 Also as set out above, the LTC project's emphasis on road expansion instead of sustainable transport alternatives is a missed opportunity to encourage low carbon modes of transportation. By prioritising road-based solutions, the project perpetuates car-dependent lifestyles and discourages the adoption of sustainable transport options such as public transportation, cycling, and walking. This approach directly contradicts the government's commitment to reducing emissions and achieving Net Zero Carbon.
		Applicant's response to paragraph 4.4 Alternatives to the Lower Thames Crossing were considered in a study in 2009 commissioned by the DfT. The Applicant reconsidered the road and rail public transport solutions in 2017 in response to the public consultation and concluded that while some of the alternative modes could be complementary to a new road crossing of the Lower Thames, none had the capability of solving the identified strategic traffic problem and meeting the Scheme Objectives. Strategic options were revisited as part of the 2022 options reappraisal, which confirmed that the decisions made remain valid. For further details refer to Section 3.6 and Section 3.9 of ES Chapter 3: Assessment of Reasonable Alternatives [**APP-141**]. The Applicant is also proposing a number of improvements to the Walking, Cycling and Horse Riding (WCH) network. These proposed WCH routes not only mitigate severance arising as a result of the Project, but also address historic severance such as the M25 and the A127. Connectivity between communities and to the wider area would be achieved through the betterment/upgrade of existing PRoWs and through the provision of new PRoWs or permissive pathways. This strategy for WCHs has been developed being cognisant of local authorities' aims to improve active travel connectivity to help meet their policy objectives. Throughout the design process, the strategy has been developed taking on board comments received through the statutory and formal consultation processes. The design of these new WCH routes shall maximise access for users (including those with limited mobility) through good design. Proposals for new or improved infrastructure for WCHs aim to promote health and wellbeing across the region by encouraging active travel, which may assist in reducing the reliance on motorised vehicles for short trips. The proposals also aim to provide improved connection for WCH between parks, woodlands and heritage sites, and for local communities by improving access to existing and future employment, housing, leisure and retail employment centres.
		WR Extract: 4.5 The LTC, once constructed, will lock in transportation patterns, dependencies, and modes of travel for an extended period. By prioritising road infrastructure over sustainable alternatives, the project risks inhibiting the

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		necessary transition to low-carbon transportation systems and potentially delaying progress towards the Net Zero Carbon targets.
		Applicant's response to paragraph 4.5 Refer to the response to paragraph 4.4.
		WR Extract: 4.6 It is evident that the implementation of the LTC project will have detrimental consequences for the UK Government's ability to achieve its Net Zero Carbon targets. The LTC project's contribution to increased vehicle emissions, induced traffic demand, dis-incentivisation of sustainable transport, lock-in effect, and missed opportunities for carbon reduction all undermine the government's commitment to addressing climate change.
		Applicant's response to paragraph 4.6 ES Chapter 15: Climate [**APP-153**] demonstrates that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets and that, in line with the IEMA guidance: 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' the Project is compatible with the budgeted science-based 1.5°C trajectory (in terms of rate of emissions reduction) and both complies with and exceeds up-to-date policy and 'good practice' reduction measures. Moreover, the Project would put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets.
		WR Extract: 4.7 It is therefore our firm view that, rather than investing in road expansion, the UK Government should prioritise investments and policies that support sustainable transportation. This includes promoting efficient public transport networks, expanding cycling and walking infrastructure, and encouraging the adoption of low-emission vehicles. By focusing solely on road-based solutions, the LTC project overlooks opportunities for significant carbon reduction and impedes the UK Government's progress towards its Net Zero Carbon targets.

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		Applicant's response to paragraph 4.7 Refer to the response to paragraphs 4.4. 4.5 and 4.6.
		WR Extract: 4.8 To take such action would not be without precedent as on 14th February 2023 the Welsh government announced the suspension of all major road building over environmental concerns, particularly increased climate impact. For similar reasons Climate Change Committee's progress report published 28th June highlighted the need to conduct a systematic review of current and future roadbuilding projects in order for the government to meet its own carbon budget delivery plan.
		Applicant's response to paragraph 4.8 It is noted that the Transport Decarbonisation Plan states that '*Continued high investment in our roads is therefore, and will remain, as necessary as ever to ensure the functioning of the nation and to reduce the congestion which is a major source of carbon*'. The Project is considered vital to reduce congestion on the busiest part of the strategic road network. Refer to Need for the Project [**APP-494**]. The Applicant awaits the UK Government's response to the recommendations set out in the Climate Change Committee's progress report to Parliament, published on 28 June 2023 and will continue to support the DfT in decarbonising the transport sector. The Applicant has set out its own pathway to supporting the DfT's decarbonisation of the surface transport sector through the publication of their 2021 plan '*Net Zero highways: Our 2030, 2040 and 2050 plan'.* This plan contains a commitment to make the Project transformational as a pathfinder project to test low carbon innovation and approaches for the wider construction industry, in line with the Government's decarbonisation strategy. In addition there are 22 commitments in the Carbon and Energy Management Plan [**APP-552**] that set out ways in which the Project intends to minimise construction emissions and set a new trajectory for carbon reduction for the UK infrastructure construction industry. The Applicant would put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would

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		have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets.
		WR Extract: **5.0 Cost benefit:** 5.1 With respect to the whether the project produces a positive Benefit Cost Ratio (BCR) it's our view that the costs associated with the project are being significantly underestimated, while the benefits are being overstated. 5.2 Our main concern is that the assessment is clearly failing to encompass the full extent of costs to the taxpayer resulting from road projects outside of the order limit that will inevitably be required as a consequence of the Lower Thames Crossing. This is because the current cost analysis only takes into account the direct costs of the project within the order limits. This approach overlooks the substantial costs that will be incurred for the construction and maintenance of additional road infrastructure beyond the order limit. These costs should be factored into the overall evaluation to provide a comprehensive understanding of the financial implications for the taxpayer. 5.3 In addition, and as raised at the issue specific 1 hearings, it would seem that the calculations within the assessment are already flawed, particularly regarding assumptions made regarding inflation. Given the dynamic nature of economic conditions, it is crucial to use accurate and up-to-date data when projecting future costs and benefits. Failing to do so undermines the credibility and reliability of the analysis, potentially leading to inaccurate conclusions. 5.4 We also recognise the concerns raised by others that there is a disproportionate emphasis on individual impacts, rather than considering the broader implications of the scheme holistically. The analysis tends to isolate impacts within specific topics, neglecting to address their cumulative effects when combined. 5.5 The consequence is that the information being provided is convoluted and difficult to understand, making it challenging for interested individuals to grasp the true implications of the project.
		Applicant's response to paragraphs 5.1 to 5.3 The economic appraisal of the Project and the calculation of the BCR have been undertaken in accordance with DfT's Transport Analysis Guidance (TAG). The Applicant provided a response regarding the BCR at Section 4.8 of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**]. The Applicant does not consider that the calculations are flawed as the appraisal has followed TAG. The Applicant provided a response regarding Inflation in Annex H.3 of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**].

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		WR Extract: **7.0 Air pollution and Nitrogen Deposition:** 7.1 The examining authority will be aware of the UK Governments commitment to legally binding air quality targets under the Environment Act 2021, aiming to reduce PM 2.5 concentrations to 10 µg/m3 by 2040.
		Applicant's response to paragraph 7.1 The targets for particulate matter where particles are less than 2.5 micrometres in diameter ($PM_{2.5}$) as set out in the Environment Act 2021 and the Environment Improvement plan, were enacted following the submission of the Development Consent Order (DCO), as part of The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (ETR) on 30 January 2023. It is currently not possible to determine how the Project would affect compliance with the $PM_{2.5}$ targets as there is no guidance from Defra on how the targets should be considered in the planning process. Furthermore, there are no air quality model inputs such as background pollution maps available for $PM_{2.5}$ beyond 2030, which means the legal target cannot be assessed quantitatively. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 are clear that the legal target will only be measured and assessed at monitoring stations (such as the Defra Automatic Urban Rural Network (AURN)). It is the Applicant's understanding that the 12µg/m^3 interim $PM_{2.5}$ target set in the UK Government's Environmental Improvement plan are not legally binding and compliance is likely to be determined in the same way as the legal $PM_{2.5}$ target (i.e. at AURN monitoring stations). The Applicant has analysed the latest air quality monitoring data from the AURN and it should be noted that for 2022, the interim $PM_{2.5}$ target was achieved across the entire AURN in England (which includes more than 80 monitoring stations). Only six monitoring stations monitored $PM_{2.5}$ concentrations which exceeded the legal target of 10µg/m^3, but only by a small margin (maximum annual mean 12µg/m^3). $PM_{2.5}$ concentrations are expected to decline in the future in response to ongoing actions undertaken by UK government and local authorities to reduce emissions, and so it is likely monitored concentrations would be lower by the legal target compliance date of 2040. It is therefore considered unlikely that the Project would impact on achievement of the $PM_{2.5}$ targets. The air quality assessment reported in ES Chapter 5: Air Quality [**APP-143**] showed that the Project would comply with the current legal thresholds for $PM_{2.5}$. Air quality modelling confirmed that there would be no exceedances of the annual mean $PM_{2.5}$ AQS objective of 25µg/m^3 and the annual mean $PM_{2.5}$ Limit Value of 20µg/m^3 across the study area in both the Do-Minimum and Do-Something scenarios of the construction and operational phases.

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		WR Extract: 7.2 However, and as pointed out by other commentators, current measurements across 85 monitoring sites already exceed this target, with the highest concentration at 15.9 µg/m3 and the lowest at 11.1 µg/m3. Predictions for 2030 show an increase in PM 2.5 concentrations across all sites, ranging from 11.7 µg/m3 to 23.3 µg/m3, indicating that the Project will undoubtedly violate the air quality targets for 2040.
		Applicant's response to paragraph 7.2 The Applicant cannot comment on this as it is not familiar with the underlying information that is being used in this comment, see response to paragraph 7.1.
		WR Extract: 7.3 Long-term exposure to elevated levels of PM2.5 increases the risk of heart disease, stroke, lung cancer, and respiratory diseases. joint OECD [Organisation for Economic Co-operation and Development] and EU report from 2020 found that up to 346,000 deaths within the EU in 2018 were attributable to PM2.5.
		Applicant's response to paragraph 7.3 The Environmental Statement included an air quality assessment (ES Chapter 5: Air Quality [**APP-143**]). This considered sensitive receptors, and was assessed to the relevant air quality thresholds (Air Quality Objectives and Limit Values, which are inherently protective of the environment and health). The methodology applied follows Design Manual for Roads and Bridges LA 105 (Highways England, 2019), to ensure the Applicant can test the Project's impacts against the requirements in the National Policy Statement for National Networks (NPSNN) (DfT, 2014). This assessment was completed, submitted and concluded that the operational phase does not result in a significant effect on human health receptors. While sufficient to determine compliance with the NPSNN, residual concerns were noted through wider engagement, and additional work was initiated to set potential risk of changes in pollutants into context and to respond to concerns from stakeholders in relation to non-threshold pollutants, *by assessing the potential health risk from changes in pollutant concentration regardless of the absolute levels and whether these exceed legal thresholds*. An Air Quality Quantitative Health Impact Assessment is being carried out, applying the approach and supporting evidence base collated by the Department of Health's Committee on the Medical Effects of Air Pollutants, and the Clean Air for Europe programme. The adopted methodology utilises robust concentration response functions recommended for quantification by the Committee on the Medical Effects of Air Pollutants, as well as the existing health burden and population numbers at the local level, and the effect of the Project on NO_2 and $PM_{2.5}$

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		concentrations, as assessed in ES Chapter 5: Air Quality [**APP-143**]. The assessment has no lower threshold to the assessment, so changes of all magnitudes, no matter how small, are considered. The assessment is ongoing, and the Applicant will provide a technical report detailing the rationale, methodology and findings of the Air Quality Quantitative Health Impact Assessment to the Planning Inspectorate at Examination Deadline 3.
		WR Extract: 7.4 A switch to electric vehicles will not solve the issue of PM2.5, though may make it worse. This is because Electric vehicles tend to be heavier than fossil fuel powered vehicles due to the weight of the battery. This is exacerbated in the case of larger electric vehicles, such as plug-in SUVs, which contain a considerably sized powertrain. Large electric vehicles produce up to 8% more PM2.5 than their internal combustion engine equivalent, according to the Organisation for Economic Co-operation and Development study.
		Applicant's response to paragraph 7.4 The Applicant has reviewed a number of studies that have been published on non-exhaust $PM_{2.5}$ emissions from electric vehicles. A study by Timmers and Achten (2016)[1] reported that there was a positive relationship between vehicle weight and non-exhaust particulate emissions, and highlighted that electric vehicles were found to be 24% heavier than equivalent internal combustion engine vehicles (ICEVs). The study also found that as a result of a reduction in exhaust emissions of $PM_{2.5}$ in electric vehicles, $PM_{2.5}$ emissions were 1-3% lower for electric vehicles compared to ICEVs, even when accounting for the additional non exhaust emissions that arise from heavier electric vehicles. Another review published by Harrison *et al*. (2021)[2] highlighted that all emissions inventories for European countries, including the UK, show that pollutant emissions from non-exhaust sources increase over time as the number of vehicles and distance travelled increases, whereas exhaust emissions mostly decrease as newer vehicles are subject to tighter emissions standards. The review also cited a study by the Organisation for Economic Co-operation and Development (2020)[3] which estimates that lightweight electric vehicles emit 11-13% less non-exhaust $PM_{2.5}$ and heavier electric vehicles emit 3-8% more non-exhaust $PM_{2.5}$ than ICEVs, and a study by Beddows and Harrison

[1] Timmers V.R.J.H., Achten P.A.J. (2016). Non-exhaust PM emissions from electric vehicles. Atmospheric Environment 134.
[2] Harrison R.M., Allan J., Carruthers D., Heal M.R., Lewis A.C., Marner B., Murrells T., Williams A. (2021). Non-exhaust vehicle emissions of particulate matter and VOC from road traffic: A review. Atmospheric Environment 262.
[3] Organisation for Economic Co-operation and Development (2020). Non-exhaust Particulate Emissions from Road Transport : An Ignored Environmental Policy Challenge. Accessed January 2023. https://www.oecd-ilibrary.org/sites/4a4dc6ca-en/index.html?itemId=/c39999ontent/publication/4a4dc6ca-en

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		(2021) that concluded that the outcome of non-exhaust particulate emissions will be dependent upon the extent of regenerative braking relative to use of friction brakes on EVs but overall there will only be modest changes to the total local emissions of particulates as compared to a passenger car (i.e. an ICEV) built to current emissions standards. Based on the studies cited, it is clear that there is uncertainty around the balance of reduced exhaust $PM_{2.5}$ from electrification and non-exhaust $PM_{2.5}$ from reduced brake wear during regenerative braking compared to the increase in $PM_{2.5}$ associated with the greater vehicle weight of EVs. However, the studies reviewed by the Applicant suggest that there is sufficient confidence that the transition towards increased uptake of electric vehicles will not cause large increases to $PM_{2.5}$, if at all. The quantum of change will be dictated by the rate of uptake of EVs, the efficacy of regenerative braking systems, the speed of deployment of future innovations in reducing vehicle weight (for both EVs and ICEVs) and through refining existing features such as tyre design to reduce wear. In November 2022, the European Commission presented its proposals for the implementation of the new Euro 7 emission standard which would apply from 2025. For the first time the standard includes regulations that cover particulates from brake and tyre abrasion, that would also affect EVs as well as new hybrid and diesel/petrol vehicles. All newly registered passenger cars must comply with a brake abrasion limit value when Euro 7 comes into force. This is 7mg per km initially, and then reducing to 3mg per km from 2035. It is estimated that this would lead to 27% reduction of particles from braking as compared to the Euro 6/VI vehicles. Limit values have not yet been proposed for heavy duty vehicles. While the UK has left the European Union, the standard may be adopted in the UK as a means of facilitating imports and exports of motor vehicles in the future. It does however demonstrate that there will be mechanisms to substantially reduce particulates from the transportation sector in the future.
		WR Extract: 7.5 Similarly, the legal limit for nitrogen dioxide (NO2) set by the Air Quality Standards Regulations 2010 is 40 µg/m3, yet 68 out of 227 local authority monitoring sites exceed this limit, which is 30% of the sites. The World Health Organization (WHO) recommends an annual NO2 pollution level of 10 µg/m3, significantly lower than the UK's current limit. In Kent, 32% of monitoring sites surpass the legal NO2 limit, with some sites exceeding 70 µg/m3, and all 227 sites surpass the WHO's recommended level.
		Applicant's Response to paragraph 7.5 It should be noted that the WHO Air Quality Guidelines have no legal basis in the UK. To comply with the NPSNN the air quality assessment is required to consider the impact of the Project against legal thresholds. While existing monitoring may indicate exceedances of Air Quality Strategy (AQS) objectives, it is not necessarily the case there

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		will be exceedances at relevant exposure locations such as residential properties where the annual mean AQS objective applies. Most monitoring sites are installed on lampposts or other street furniture, which are typically locations closer to roadside and therefore vehicle emissions compared to receptors such as residential properties. It is for this reason that the air quality assessment has used dispersion modelling verified against these monitoring locations to determine whether there are exceedances at receptors (i.e. locations where the AQS objectives apply). In relation to Kent there are predicted to be nine receptors which exceed the annual mean NO_2 AQS objective where air quality worsens and nine which exceed annual mean NO_2 AQS objective where air quality improves as a result of the Project. Overall, the air quality impact of the Project on human receptors is not considered to be significant.
		WR Extract: 7.6 Regarding the Project's impact on air quality, data shows that five out of 10 monitoring sites within 200 meters of affected road networks already exceeded the legal NO2 limit between 2015 and 2019. The Project is predicted to cause a minor worsening of air quality for NO2 in this buffer zone, where 50% of the monitoring sites already exceed the legal limit. With 30% of monitoring sites across local authorities failing to meet the legally binding NO2 targets, granting permission for the Project would contradict the government's obligations and potentially endanger public health. It is therefore appears to CPRE Kent that the LTC project is at odds with the governments commitments under the Environment Act 2021
		Applicant's Response to paragraph 7.6 The Applicant is unclear as to what data CPRE Kent is referring to, however , in terms of the $PM_{2.5}$ targets set out in the Environment Act 2021 and laid down in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, the Applicant does not consider that the Project will impact on the achievement of these targets (see response to paragraph 7.1).
		WR Extract: 7.7 It is a similar situation with respect to nitrogen deposition. Here the applicant has concluded there are 36 sites likely to experience a significant effect as a result of the change in nitrogen deposition, 29 of which totalling 176.4 hectares (ha) where the change in Nitrogen Deposition results in a continuing residual significant effect. sites totalling 176.4 hectares (ha). 7.8 Here, and as previously raised by CPRE Kent in response to the June 2023 minor refinement consultation, we are extremely concerned with the manor by which these sites, where there is an otherwise accepted significant effect, are all being screened out of the Appropriate Assessment. This is on the basis that the mitigation and

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		compensation being proposed will be sufficient to bring all sites collectively below the 1% of the critical load for nitrogen threshold to allow a conclusion of no significant effect.
		Applicant's response to paragraphs 7.7 and 7.8 The assessment of the effects of nitrogen deposition on habitats within designated sites is included within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**, **APP-404**, **APP-405**, **APP-406**] and Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment (HRA) [**APP-487**]. The assessments are summarised in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. The HRA screened out Thames Estuary and Marshes Ramsar and North Downs Woodlands SAC as the Project contribution to nitrogen deposition did not exceed the Lower Critical Load and the change was inconsequential. The HRA took Epping Forest SAC to Appropriate Assessment and concluded no adverse effect on integrity of the site. The assessment of the effects of nitrogen deposition on habitats within designated sites concluded a residual significant effect (after mitigation) on 29 sites and the compensation measures are described in ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**].
		WR Extract: 7.9 Again our first question is to ask why avoidance measures have been disregarded in favour of mitigation and compensation contrary to what is required in line with the established mitigation hierarchy. The only justification provided within the DCO documents is that "the Project route and design have been selected after extensive development, engagement, and consultation". As set out in previous consultation responses by CPRE Kent, mitigation and compensation should be options of last resort, yet nowhere are we seeing a detailed assessment as to what bearing the Air Quality (and other ES issues where significant effects have been found) have had in terms of the initial site selection process. That is, would selection of one of the other site location options have avoided the current extent of significant nitrogen deposition effects we are currently presented with? 7.10 In terms of active mitigation being considered, it appears from the DCO documents that this is now limited to a 70mph enforced limit, eastbound between M2 junctions 3 and 4. It is our view this is a far too light touch approach to the issue.
		Applicant's Response to paragraphs 7.9 and 7.10 As significant air quality effects were identified on designated ecological sites, the Applicant followed the Design Manual for Roads and Bridges LA 105 (Highways England, 2019) approach in developing the Project Air Quality Action Plan (PAQAP) (presented in ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**]). The measures to reduce nitrogen deposition from the Project needed to be quantifiable and deliverable. As a result, the Applicant

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		determined for each site whether any measures could be incorporated into the Project that would result in quantifiable reductions in emissions (and hence nitrogen deposition) that would reduce the Projects impacts. The 70mph enforced speed limit was identified as a measure that was both quantifiable and did not result in unacceptable effects. Other measures were also considered but were discounted, for example the Applicant looked at 60mph speed limits but assessed these to be undeliverable due to rerouting of traffic onto the local road network.
		WR Extract: 7.11 It is therefore the case that what actually is being proposed is an almost entirely compensation approach of habitat creation. It is only when we dig deep into the Project Air Quality Action plan that amazingly we see that habitat management measures within affected sites, along with habitat creation or enhancement measures adjacent or near the affected sites, were disregarded as options in favour of just creating new compensation/offset sites of which Blue Bell Hill is one.
		Applicant's response to paragraph 7.11 ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**] describes all of the mitigation measures considered and why they were discounted.
		WR Extract: 7.12 The problem with this approach is that such offsetting measures do nothing to help or protect the actual existing SAC sites where nitrogen deposition is already causing significant degradation. Instead, the degradation of these sites will only be exacerbated further by the LTC project. This includes Epping Forest and the North Downs Woodlands, where the SAC citations highlight air quality as a key attribute underpinning the conservation objectives of the sites. Likewise, both these SACs have 'restore' targets for the air quality attribute of the conservation objectives which relate to the concentrations and deposition of air pollutants to at or below the site-relevant critical load or level values. To CPRE Kent, the compensation/offsetting approach would seem to be at odds with the conservation objectives of at least these sites and hardly represents a precautionary approach.
		Applicant's response to paragraph 7.12 The proposed compensation measures are for significant residual effects on designated sites which do not include the SACs mentioned. The Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**] assess the effects of nitrogen deposition on European sites and concludes either no likely significant effect or no adverse effect on integrity of the sites and therefore no measures were required to mitigate or compensate for effects on the North Downs Woodland SAC or Epping Forest SAC.

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		WR Extract: 7.13 We also then have to consider some of the wider issues/concerns previously raised, though seemingly ignored, with respect to the air quality impact modelling. These include our concern that the assessment of air quality impacts on each SAC remains predicated upon the traffic modelling which we consider far from robust. This is because it is based upon out of date 2016 baseline data and also under represents true in-combination impacts, as it does not include traffic from residential schemes of less than 200 units, nor new employment sites of 2,011 sqm. 7.14 Further, and with respect to in combination impact specifically, we note that the Habitat Regulation Assessment (HRA), in concluding no significant impact, considers the impact of the project in isolation only and not future projects. This includes projects such as improvements to the A229 at the junctions with the M2 and M20 which, in part at least, will be needed as a consequence of increased traffic flows arising from the LTC project. It also still fails to consider the 2,000 houses to be allocated at Lidsing despite the recent conclusion at the Maidstone Local Plan hearing sessions that in fact the Maidstone plan alone is likely to result in a significant effect upon the North Downs SAC, though as yet no mitigation proposed to bring it under the 1% threshold.
		Applicant's response in paragraphs 7.13 and 7.14 A Habitats Regulations Assessment (HRA) [**APP-487** and **APP-488**] sets out the methodology and assesses the Project both alone and in-combination with other plans and projects for all of the identified effect pathways and European Sites. As stated in the HRA the Applicant's transport model assesses the Project alone and in-combination. The Applicant's approach follows the DfT guidance on how to deal with traffic growth and future developments. The level of traffic growth in each Middle Layer Super Output Area (MSOA) census area is forecast by the DfT using the National Trip End Model. In these forecasts, the main factor that determines the level of traffic growth is the predicted increase in population, as provided by the Office for National Statistics, the future demographic profile of the population, forecasts of GDP growth and levels of car ownership and driving licence holding. The DfT provide the forecasts of the growth in traffic levels for each MSOA in software known as TEMPro. When using these forecasts in transport models DfT guidance allows for the spatial adjustment of this growth to allow for specific developments. A development is included in the Uncertainty Log if it was under construction, had a planning application or permission as of 30 September 2021 (when the Uncertainty Log was finalised). However, the overall level of traffic growth in an area must be controlled in the transport model to the levels of growth provided in the National Trip End model. The transport model is run for the do minimum scenario, i.e. with future growth and known new highway schemes and is then run again with the sole addition of the Project (the Do Something Scenario).

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		This approach has the growth in traffic related to Office of National Statistics population projections. Minor differences in local-scale location of developments would not significantly change the predictions of traffic on the wider road network that extends over a large area encompassing a number of local authorities. The model is therefore appropriate and precautionary for assessing effects on the affected road network. In local plan modelling, local authorities test a whole range of local sites and usually include sites which do not end up being developed. Local plan modelling has a different purpose, to look at the local implications of growth in very specific locations and is often undertaken to assist in the decision-making process as to where the increasing population in an area might be housed. The modelling undertaken for the Project looks specifically and in detail at the difference a new crossing would make to traffic flows in Kent and Essex.
		WR Extract: 7.15 With respect to the nitrogen deposition compensation areas being provided, very little detail is made available as to how this will be managed and monitored. Again, CPRE Kent raised this in response to June 2023 minor refinement consultation, specifically raising the point of how we could assess the effectiveness of the proposed reduction in compensation land being made available when this justification was based on the success of a Countryside Stewardship scheme outside the applicant's control when no detail was given regarding this scheme.
		Applicant's response to paragraph 7.15 The Applicant has a process for the development of the detailed design (including the consultation process within it) to ensure that the measures proposed and secured in the DCO will deliver the required objectives. The Applicant has engaged with, and will continue to engage with, relevant stakeholders in developing that process. The detailed design process will involve a consistent and accessible process and documentation for all environmental designs. The detailed design process will identify detailed outcome-based objectives and success criteria that will form the basis of the detailed monitoring plan for delivery. The outcome-based objectives will also be the basis of detailed design of establishment and long-term management prescriptions. The appropriateness of the reduction of nitrogen deposition compensation described in the minor refinement consultation does not rely on the success or otherwise of the Countryside Stewardship Scheme. The Applicant considers that the reduced area of nitrogen compensation still achieves the objectives while reducing impacts on business.
		WR Extract: 7.16 Given it is our view the compensation/offsetting approach is already a flawed approach at odds with the conservation objectives of at least some of the affected sites, and that the Air Quality impacts already appear to be

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		being underplayed, we can only but conclude that the LTC projects impact upon Air Quality and degradation as a consequence of nitrogen deposition must be weighed heavily against the scheme.
		Applicant's response to paragraph 7.16 The compensation / offsetting approach proposed by the Applicant in the Project Air Quality Action Plan [**APP-350**] is in response to significant residual effects on designated sites and habitats which do not include the SACs mentioned above and therefore the conservation objectives of them are not relevant to the assessment in the ES. The Habitats Regulations Assessment (HRA) [**APP-487**] assesses the Project for impacts on European Sites, including consideration of their conservation objectives.
		WR Extract: **8.0 Heritage and Cultural impact:** 8.1 The proposed route is within a highly sensitive area for the historic environment and will therefore impact upon a wide range of heritage assets. In particular, CPRE Kent share the concerns as outlined by Historic England within their relevant representation dated 23rd February 2023 that the demolition of three listed buildings and impact upon the schedule monument Cropmark Complex Orsett causes clear substantial harm and must be weighed against the project.
		Applicant's response to paragraph 8.1 The Applicant has provided a detailed assessment of the impacts of the Project on these designated assets in Section 6.6 of ES Chapter 6: Cultural Heritage [**AS-044**]. The Applicant agrees with the conclusion of substantial harm on the scheduled monument (and non designated asset 247) and the three identified listed buildings as reflected in the assessment.
		WR Extract: 8.2 We also endorse the view of Gravesham Borough Council that the focus of the survey work upon individual harms to heritage assets fails to provide a collective overall assessment as to the clear heritage harm that will be caused by the LTC project. They conclude that the result is an underestimate of the impacts, and therefore the application contains insufficient mitigation. This is particularly true for the village of Thong, with its conservation area, and its setting in the wider historic landscape. We would agree.
		Applicant's response to paragraph 8.2 The methodology used by the Applicant in relation to cultural heritage is set out in Chapter 7 of the Environmental Impact Assessment – Scoping Report and was accepted in the Scoping Opinion. Historic England (as the

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		Government's adviser on all aspects of the historic environment in England), Essex County Council, Kent County Council and Thurrock Borough Council have not challenged the methodology. Heritage assets have been considered by period and geographical region in ES Appendix 6.1: Cultural Heritage Desk-based Assessment [**APP-351**, **APP-352**, **APP-353**, **APP-354**] which provides an overarching assessment of the Project's heritage effects. The assessment of individual heritage assets is, however, entirely aligned with the relevant policy tests in the NPSNN at paragraphs 5.120 to 5.142,– which are definitive in requiring assessment of impact on heritage assets. The Applicant has developed heritage mitigation in consultation with key heritage stakeholders which is set out in ES Appendix 6.9: Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation [**APP-367**].

REP1-227 Essex Wildlife Trust

Rep ID	WR Submitter	WR/Applicant's Response
REP1-227	Essex Wildlife Trust	**WR:** WR Link: **REP1-227**
		Applicant's Response: **Impacts on nationally important invertebrate assemblages:** • The scope and methodology for the survey work undertaken, together with any relevant limitations, assumptions and how they have affected the results of those surveys is detailed in Environment Statement (ES) Appendix 8.3: Terrestrial Invertebrates [**APP-392**]. • Paragraph 6.5.74 of Chapter 5 of the Planning Statement [**APP-495**] states: '*Loss of habitat used by terrestrial invertebrates and mortality of terrestrial invertebrate assemblages is identified as a significant impact within the ES. These impacts would be temporary, however, and would persist on a short-term temporary basis (approximately five years) between the time when habitat clearance is undertaken and the establishment of the newly created habitats.*' • ES Appendix 8.23: Terrestrial Biodiversity Legislation and Policy [**APP-419**] states that the Project seeks to avoid significant effects on biodiversity; however, these effects cannot be avoided in every case. In terms of mitigation, the assessment states that the Project considered the most appropriate ways to mitigate adverse effects and where significant harm to biodiversity cannot be avoided or reduced through mitigation, then compensation measures are proposed. • ES Chapter 8: Terrestrial Biodiversity [**APP-146**] describes the magnitude of the impacts, the measures proposed to avoid, reduce, and compensate for the effects and any residual effects on the receptors identified above. These measures include the creation of significant areas of habitat (woodland planting; creation of open mosaic habitat; wetland habitats), the locations of which would act to link up existing similar habitats and areas of high biodiversity interest. These are detailed within ES Figure 2.4: Environmental Masterplan, Sections 1 to 10 [APP-159 to **APP-168**] and the Design Principles [**APP-516**]. Their long-term management provision is reported within the outline Landscape and Ecology Management Plan [**REP1-173**]. **Impacts on Thames Estuary and Marshes Special Protection Area (SPA)** • The effects of the Project on the Thames Estuary And Marshes SPA and Ramsar site have been assessed and are reported within the Habitats Regulations Assessment - Screening Report and Statement to Inform an

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		Appropriate Assessment [**APP-487**]. The Project includes mitigation, in the form of habitat enhancement at two locations, to reduce the effect of land take (within functionally linked land) during construction. The habitat enhancement locations are at Coalhouse Point and three fields south of the Metropolitan Police firing range and adjacent to the SPA/Ramsar site. Both of these areas will be enhanced prior to commencement of construction as per commitments HR010 and HR007 set out in the Register of Environmental Actions and Commitments (REAC) within ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. This mitigation ensures that the functionality of that habitat, in maintaining the qualifying bird feature populations, is not reduced throughout construction. • The wetland habitat at Coalhouse Point has been secured in REAC commitments HR010 'Habitat enhancement in functionally linked land' and HR011 'Constraints to works to form the water inlet with self-regulating valve' which secure the water supply before the commencement of construction. **Impacts on ancient woodland and veteran trees** • It is agreed that where possible, the loss of veteran trees and ancient woodland should be avoided. The Applicant has worked to avoid impacts, but where they are unavoidable, has sought to design a compensatory package of planting and other measures, in discussion with stakeholders. Where the loss of veteran trees is unavoidable, the hulks of those trees would be translocated. The Contractor will still be obliged to retain all existing vegetation as far as reasonably practicable as is set out in clause LSP.01 of the Design Principles [**APP-516**] and commitment to mitigate effects during construction in accordance with ES Appendix 2.2: Code of Construction Practice [**REP1-157**], including commitments LV001 and LV013 of the Register of Environmental Actions and Commitments to reduce vegetation loss where practicable This includes potential veteran trees which will commit the contractors to limit and mitigate their impact to areas such as Rainbow Shaw so far as reasonably practicable and will be considered further at the detailed design stage. This matter remains subject to detailed development of plans for compensatory planting and other measures via the Environmental Masterplan [**APP-159** to **APP-168**]. The design of the ancient woodland compensation planting did not focus on meeting loss:gain ratio targets but works to link into existing high quality woodland habitat such as Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI), Great Crabbles Wood SSSI and Jeskyns Community Woodland. The objective, following guidance from the Defra family and agreed with Natural England, is to provide landscape-scale planting, creating new areas of high quality woodland habitat to build and strengthen coherent ecological networks within the wider landscape.
		Water vole mitigation • The Applicant has developed the water vole mitigation strategy in conjunction with Essex Wildlife Trust to integrate into the wider Waterlife Recovery East project aims. The Applicant's mitigation strategy includes the translocation

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		and reintroduction of water voles to the River Pant/Blackwater, and the provision for mink eradication along the Mardyke. The mitigation strategy for water vole has been discussed and agreed with Natural England as recorded in the Statement of Common Ground submitted at Deadline 2 [**Document Reference 5.4.1.6 (2)**]. Additionally, the Applicant is making a contribution to the Waterlife Recovery East project for the eradication of mink as part of the designated funds. This is set out in ES Appendix 8.10: Water Vole [**APP-399**]. • With regard to the proposed amendment to section 8.17.7 of the outline LEMP, this would be a matter for the advisory group as provided in the terms of reference set out in the LEMP Terms of Reference [**APP-491**]. **Impacts on acid grassland** • The Applicant accepts that a key consideration of the viability of a site to create acid grassland is soil pH. ES Figure 10.2: Soil Scape Mapping [**AS-047**], page 4 of 6, shows soil pH within the area north of Coalhouse Fort. The information shows that the area identified for acid grassland creation has a mix of free draining slightly acidic soils, and loamy/clayey soils of coastal and floodplain environments. This is similar to the Low Street Pit site which is the principal area of acid grassland affected by the Project and therefore the main source of soil salvaged for the area of acid grassland creation north of Coalhouse Fort. However, the predominant soil type at Low Street Pit LWS is free draining slightly acidic soils whereas at the proposed acid grassland creation site, the predominant soil type is loamy and clayey soils of coastal flats. • During discussions with Natural England, the suitability of the ecological mitigation area to support acid grassland creation were considered. The ecological mitigation area's underlying superficial deposits and the existing soil pH is a close match to the main site of acid grassland impact at Low Street Pit LWS. This is understandable given the proximity of the two areas, being within 1km at their closest point. The underlying superficial deposits across the ecological mitigation area should support similar free draining grassland to those found at Low Street Pit LWS. In terms of the location for acid grassland creation within the wider ecological mitigation area, the north appears a closer match in terms of soil pH than the south; the north being predominantly free draining slightly acid loamy soils rather than the mix of soil types found further south. The southern area is separated from the wider ecological mitigation area by the presence of a mature hedgerow running west - east across the site, which has the potential to constrain the nature spread of acid grassland species. Such a constraint is not present at the northern end of the ecological mitigation area which could then allow the natural colonisation of a larger proportion of this area by acid grassland species, thus increasing the total area of acid grassland provision in line with Natural England's representation. • It is therefore proposed that the acid grassland creation site which is currently located to the south of the ecological mitigation area be moved to the northern area (see Plate 5 for indicative location / extent), with open mosaic habitat replacing the acid grassland creation in the south. Overall there would be no significant change in

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		the provision of these habitats as detailed within ES Chapter 8: Terrestrial Biodiversity [**APP-146**], although the provisions of the outline Landscape and Ecology Management Plan [**REP1-173**], would allow for changes in management of these two habitat typologies within this area to maximise its biodiversity value. **Biodiversity Net Gain** • In the context of this question, it should be noted that the Project is applying the Natural England Biodiversity Metric several years ahead of this being a mandatory requirement. For Nationally Significant Infrastructure Projects, mandatory BNG requirements are likely to commence in November 2025. Throughout the development of the Project design, various versions of the Biodiversity Metric have been available to assess the forecast Project biodiversity unit performance. It should be noted that significant elements of the Project design were fixed prior to the issue of Metric 3.1. The highways and landscape designs have therefore not been developed specifically in conjunction with the Metric 3.1. However, the design has been developed to avoid or minimise significant effects on the environment and is based on the principle of maximising biodiversity outcomes by creating the highest distinctiveness habitats appropriate to the Project. • In applying this approach, it is considered that the BNG Good Practice Principles have also been applied. The mitigation hierarchy (1) has been applied and re-applied to minimise habitat losses, especially in respect of irreplaceable habitats (2), stakeholders have been engaged throughout (3), risks have been addressed using a precautionary principle in respect of how habitat loss and creation have been applied in the Metric (4), the Biodiversity Metric has been used to ensure changes in biodiversity are measurable (5), the overriding principle in terms of habitat creation has been to achieve the best outcomes for biodiversity based on the principle of bigger, better, more joined (6), the Applicant's approach to measuring biodiversity has been careful to reflect the additionality principle (7), the habitats created within the design are committed to in perpetuity to ensure long-term benefits (8), the design provides benefits beyond biodiversity provision such as through SuDS (9) and throughout, the Applicant has made every effort to be transparent in claims regarding BNG (10). • The Project's biodiversity metric forecasts, reported in ES Appendix 8.21: Biodiversity Metric Calculations [**APP-417**], are based on the preliminary design and a number of limitations and assumptions (as detailed in Section 5 of that appendix) that have had to be made to allow a quantitative forecast of biodiversity unit change. It is considered that this assessment provides a realistic worst-case scenario of the likely performance of the Project in terms of net biodiversity, given the necessarily precautionary nature of the assumptions made. As stated within this technical appendix, the Project recognises that it would result in the loss of irreplaceable habitats such as ancient woodland, and that this would prevent any overall claim of Biodiversity Net Gain for the Project (paragraph 1.1.10).

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		• The trading rules referred to concern the general Biodiversity Metric 3.1 rule (Rule 3) that habitat losses should be compensated for by creating habitats on a broadly like-for-like, or like-for-better basis. As per ES Appendix 8.21, the trading rule is reported as not being met in Metric 3.1 for woodland due to the loss of high distinctiveness habitat lowland mixed deciduous woodland (excluding ancient woodland loss). This is shown as offset in the Metric by medium distinctiveness woodland, proposed as a precautionary approach to achieving target habitat type at this stage of the Project. While there is a net increase in woodland extent in the BNG assessment of 70ha post-development (this figure excludes all woodland planting proposed for ancient woodland compensation and nitrogen deposition planting), the classification of the woodland to be created as medium distinctiveness, and the low biodiversity units scores generated by woodland creation in the Metric, result in a trading failure. It should be noted that not all habitat loss and creation activities are included in the BNG calculations and the forecast BNG performance should be considered in the context of these exclusions. • As discussed in ES Appendix 8.21 there are a number of opportunities for refining the forecast and for improving the outcomes for biodiversity as the Project progresses. It is expected that the currently estimated reasonable worst case Metric performance would be bettered during detailed design as design refinements would seek to further reduce habitat loss during construction, minimise lags between habitat loss and creation and to maximise the condition and distinctiveness of habitats created. The Project would seek to maximise biodiversity performance over the full project lifecycle. **Pulverised Fuel Ash** • The Applicant acknowledges the importance of PFA as a low-nutrient substrate, and has committed to its use as part of its approach to Open Mosaic Habitat (OMH) as set out in clause LSP.22 of the Design Principles [**APP-516**]: '*Pulverised fuel ash (PFA) and sands and gravels generated by the construction works shall be used to provide approximately 10% of overall area of the OMH substrate to mimic the substrate in areas where the habitat is currently found within the Order Limits*'. **Additional Comments** • ES Chapter 15: Climate [**APP-153**] presents an assessment of the likely significant effects of the Project on climate during both construction and operation. Paragraph 15.9.9 notes that, although total GHG emissions over the Project appraisal period (construction plus 60 years of operation) are approximately 6.596 million tCO_2e (as noted by the representor) this is reduced to between 2.324 million and 2.938 million tCO_2e as a result of the net zero policy of Government's Transport Decarbonisation Plan. Mitigation of the Project's effects on GHG emissions is explained in Section 15.5 of ES Chapter 15. In summary, paragraph 15.9.12 of ES Chapter 15 concludes that:

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		'*The Project would fulfil both criteria used to determine that GHG emissions from the Project are considered* ***not significant****:* *a. The GHG emissions from the Project do not have a material impact on the ability of the Government to meet the carbon reduction targets.* *b. The Project is compatible with (or goes beyond) the budgeted, science-based 1.5°C trajectory of the Paris Agreement (in terms of rate of emissions reduction) and complies with up-to-date policy and 'good practice' reduction measures to achieve that*.' • Plate 15.4 of ES Chapter 15: Climate [**APP-153**] summarises the Project's Carbon Plan which is explained in full in the Applicant's Carbon and Energy Management Plan [**APP-552**]. • The assessment of the effects of nitrogen deposition on wildlife sites affected by changes to the wider network is included within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**, **APP-404**, **APP-405**, **APP-406**] and Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. The assessments are summarised in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. • The Applicant has included mitigation for the impacts from severance from construction and operation of the Project has been mitigated with a number of measures including green bridges, viaducts over ecologically significant areas, and watercourse culverts. As reported in paragraph 8.5.8 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**], the Green Bridges have been individually designed to provide the greatest benefit at each particular crossing location with reference given to the Landscape Institute Technical Note for Green Bridges (Landscape Institute, 2015). • The cumulative effects of the Project in combination with other existing and/or approved developments and referred to as 'inter-project' effects are assessed within ES Chapter 16: Cumulative Effects Assessment [**APP-154**]. This chapter considers cumulative effects on terrestrial biodiversity as a whole and includes specific assessments on species groups where relevant (see Section 16.5).

REP1-239 Gravesham Rights of Way Committee

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REP1-239	Gravesham Rights of Way Committee	**WR:** WR Link: **REP1-239**
		Applicant's Response: **General Comments** The Project has undergone a thorough assessment of route alternatives, which is presented in Environmental Statement (ES) Chapter 3: Assessment of Reasonable Alternatives [**APP-141**] and Planning Statement Chapter 5: Project Evolution and Alternatives [**APP-495**]. The assessment of route alternatives has taken into consideration impacts on 'local development plans' and 'planned development' alongside other constraints. As described in Chapter 5 of the Planning Statement [**APP-495**], decisions made at each stage of the route selection process have been reappraised both following the Statutory Consultation in 2018 and in preparing the DCO Application. The proposed design represents a sustainable solution to the need for the Project (Need for the Project [**APP-494**]) that meets operational requirements. ES Chapter 6: Cultural Heritage [**AS-044**] describes how the proposed alignment has avoided designated heritage assets such as scheduled monuments, Conservation Areas and listed buildings where possible. Where this has not been possible, efforts have been made to minimise the physical impacts on these assets as much as possible and remaining impacts have been accounted for in the assessment. The new road would be landscaped to protect views across historic landscape and topography. As per clause LSP.07 of the Design Principles [**APP-516**], the proposed landscape design takes account of local landscape character and respects historic features, historic land use, landforms, field patterns and boundaries. ES Chapter 6: Cultural Heritage [**AS-044**] states that no significant effects to built heritage south of the River Thames has been identified. The forecast changes to traffic flows as a result of the Project are presented in the Transport Assessment [**APP-529**]. It demonstrates that the overall level of traffic using the Dartford Crossing is forecast to fall by an average of 19% in 2030, when compared with forecasts without the Project, and remain below current levels for the foreseeable future. Average speeds on that part of the network would rise and journey times would become more reliable. In terms of safety, Table 9.5 of the Transport Assessment [**APP-529**] shows that the Project would result in a reduction in the accident rate (accidents per vehicle kilometre travelled) in the area. The Transport Assessment also

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		states that emergency access and vehicle turn-around facilities would be provided at the tunnel portals. Cross-passages providing a connection between the two tunnels would be provided for emergency incident response and tunnel user evacuation. Tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations. The Applicant is currently engaging with emergency services via the Emergency Services and Safety Partnership Steering Group (ESSP SG). As per the Draft Agreed Statement of Common Ground between (1) National Highways and (2) ESSP SG [**REP1-200**], Emergency Response Plans will be developed for the tunnel and further discussion with the ESSP SG will be undertaken to address outstanding issues. The transport benefits of the Project clearly and significantly outweigh the negative impacts on the road network, with the Project fulfilling the Scheme Objective to relieve the congested Dartford Crossing, outlined in Need for the Project [**APP-494**]. **Impact of the Development (South of the River)** **i. Motorised Traffic** Once the Project opens for traffic, there would be changes in how traffic flows across the region which are set out in Chapter 7 of Transport Assessment [**APP-529**]. Many parts of the network, for example the Dartford Crossing, would experience significant benefits on both journey times and journey reliability. A small number of locations would experience adverse impacts. Although major adverse impacts are predicted on the A229, Kent County Council is currently developing a Strategic Outline Business Case seeking DfT funding for improvements to the A229 Blue Bell Hill M2 and M20 junctions due to existing traffic flows in this location. There would be adverse impacts on traffic flow in some locations as a result of the Project; however overall, the benefits on the road network would outweigh the adverse impacts. This is reflected in the positive economic benefits of the Project which are outlined under Section 5.4 of Need for the Project [**APP-494**]. The Applicant considers that no additional interventions are necessary beyond the proposals presented in the application. Further information about the forecast changes in traffic flows as a result of the Project can be found in the Transport Forecasting Package, which is Appendix C of the Combined Modelling and Appraisal Report [**APP-522**] and the Traffic Forecasts Non-Technical Summary [**APP-528**]. The Applicant will monitor the impacts of the Project on the local and strategic road networks. If the monitoring identifies opportunities to further optimise the road network as a result of traffic growth or new third-party developments, then local authorities would be able to use this as evidence to support scheme development and case making through existing funding mechanisms and processes. The monitoring locations, which include the A229

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		junctions with both the M2 and the M20, are detailed in the Wider Network Impacts Management and Monitoring Plan [**APP-545**]. **ii. Non-motorised users (NMUs)** The Applicant is one of the biggest builders of walking, cycling and horse riding (WCH) routes in the UK. The Project's total provision of additional and improved WCH routes equates to approximately 64km, which encourages active travel. These are summarised in Table 13.54 of ES Chapter 13: Population and Human Health [**APP-151**]. The Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] and Chapter 5 of the Planning Statement [**APP-495**] set out the proposals and explain the WCH strategy that helped formulate them. Temporary restrictions due to construction are shown in the Streets Subject to Temporary Restrictions of Use Plans [**APP-027** to **APP-029**], which shows roads that would be subject to temporary alteration, diversion and restriction of use. The Project has sought to ensure that all WCH routes that will be severed by the route (and historic severances where reasonably practicable) will be reconnected. As part of the wider WCH strategy, routes have been upgraded to improve connectivity and access for more users. Where appropriate, bridges have been designed to accommodate active travel, and tie into the wider footpath and bridleway network. The WCH strategy has also explored improving and enhancing WCH network connectivity between the surrounding communities. The Applicant has ensured from Thong Lane that there is safe access for non-motorised users to Shorne Wood, Ashenbank Woods and Jeskyns Community Woodland. South of the village of Thong a new off-road track for WCH is provided on the eastern side of Thong Lane. The WCH route connects to the proposed new bridleway to the west of Thong Lane via a Pegasus crossing, continues south over the Thong Lane green bridge south, connects to the proposed link road adjacent to the A2 where a Pegasus crossing is provided and then continues across the existing HS1 green bridge. This has been designed to provide a traffic free WCH route from Riverview Park around Thong, from Shorne Wood, and to Ashenbank Woods and Jeskyns Community Woodland for those not wishing to walk or ride along Thong Lane. **Mitigation and Countryside Access Improvements** The proposed new and improved routes for WCHs as part of the overall WCH Strategy have been developed through engagement and consultation with key stakeholders and landowners, including Kent County Council as the highways authority responsible for PRoW, and Gravesham Borough Council. They have been designed specifically for the area in which they are located and the onward connection for WCH to the existing PRoW network. Furthermore, within those areas where the Applicant is proposing landforms, the use of permissive routes allows retention of some flexibility in the design going forwards as these may be subject to change during the detailed

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		design stage. For details on the rationale for the proposed WCH, please refer to the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**]. Specific WCH design principles can be found in Design Principles [**APP-516**] within Table 4.1 Project-wide design principles: Connecting people. Clause PEO.06 WCH: accessibility of Table 4.1 states that the design of new WCH routes shall maximise access for users (including those with limited mobility) through good design while considering the use of robust design elements to prevent and mitigate the potential for misuse of the WCH network by unauthorised vehicles and to prevent and deter anti-social behaviour and unauthorised access to third-party land. Access design will be undertaken at detailed design and will be subject to further engagement with stakeholders and landowners. The exact type of surface for WCH routes has not been determined. The type of surface and widths would be subject to the Design and Build process and specified during the detailed design phase in accordance with design standards and the Design Principles [**APP-516**]. The most appropriate surface type and widths will be used for each WCH route dependent upon its intended use and the surrounding environment. Reference should be made to the following design principles relating to WCH provision: • Clause PEO.01: All PRoWs crossing the Project route shall have a detail design that is safe and considers the convenience of the users and appropriateness to the context of the adjacent landscape character, with changes in level minimised where appropriate. • Clause PEO.03: Surfacing, signage, boundary treatments and access controls shall be designed with the intent of being efficient and integrated, appropriate to the type of usage permitted and appropriate to its surrounding context as much as is reasonably practicable. • Clause PEO.04: WCH routes shall be designed in accordance with the following standards: – Design Manual for Roads and Bridges (DMRB) standard CD 143 Designing for walking, cycling and horse-riding (Highways England, 2021a) – DMRB standard CD 195 Designing for cycle traffic (Highways England, 2021b) – Local Transport Note 1/20 (LTN1/20) Cycle infrastructure design (Department for Transport, 2020) – Sustrans Design Manual – Handbook for cycle-friendly design (2014) – British Horse Society advice notes

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		The Project Design Report [**APP-506** to **APP-515**] includes indicative information about surfacing for new and upgraded routes, although the final details of these would be decided by the appointed Contractors within the parameters of the assessment. All new routes would be designed to the latest standards. For example, where the Applicant is proposing new cycle routes that follow the alignment of an existing road, the cycle track would be separated from motor traffic. Where required, temporary diversion routes would be put in place until the construction works are complete. The Register of Environmental Actions and Commitments within ES Appendix 2.2: Code of Construction Practice [**REP1-157**] includes a commitment (PH001) regarding the reduction of durations that footpaths, cycleways and bridleways need to be closed. For the PRoWs in Tables 13.66 and 13.69 of ES Chapter 13: Population and Human Health [**APP-151**] the Applicant would engage with members of the public and relevant stakeholders (for example, local walking groups), to ensure they are fully appraised of any closures and diversions as far in advance as reasonably practicable, install clear signposts to outline any temporary diversions in consultation with the local highways authorities, PRoW officers and other relevant stakeholders and utilise social media to update members of the public of any closures and diversions that are in place. Due to technical complexities and constraints associated with the upgrade of the existing bridges over the HS1 railway line it was not considered viable to modify these bridges as they would require extensive structural work including widening and/or replacement to provide adequate shared WCH provision to the latest design standards and guidance. Alternative routes are available further east.

REP1-244 Kent Wildlife Trust

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REP1-244	Kent Wildlife Trust	**WR:** WR Link: **REP1-244**
		Applicant's Response: **National Policy:** • The 25 Year Environment Plan (Defra, 2019) was assessed under Table 1.3 of Environmental Statement (ES) Appendix 8.23: Terrestrial Biodiversity Legislation and Policy [**APP-419**]. The ES describes the mitigation and compensation measures to address the significant effects of the proposal on protected wildlife sites, protected and notable species, and habitats of principal importance. Although some adverse effects on sites, habitats and species would be unavoidable, the Project would provide overall improvements to the environment. When the secondary legislation is enacted, the Project will review the relevant targets and strategies in accordance with the ecological baseline found impacted by both construction and operation of the Project. **Assessment of Alternatives:** • Chapter 5 of the Planning Statement [**APP-495**] explains how the Applicant considered alternatives to the Project both in terms of alternative routes (Section 5.4) and alternative modes of transport (Section 5.3). It ultimately concludes that alternative modes will not meet the Scheme Objectives and therefore do not represent a viable alternative to the provision of a new road crossing (paragraph 5.3.19). The Applicant is taking positive and proactive steps outside the DCO process to consider non-motorised and sustainable modes alongside the provision of the new road (see paragraphs 5.3.23 to 5.3.25 of [**APP-495**]) but these are very much complementary to, rather than an alternative to, the Project. • ES Chapter 3: Assessment of Reasonable Alternatives [**APP-141**] also addresses the consideration of strategic, location and route alternatives at Sections 3.6 to 3.8 and arrives at the same conclusion. • The Carbon and Energy Management Plan [**APP-552**] sets out the Applicant's carbon ambitions for the Project and the mechanisms it will use to deliver them. The Applicant has designated the Project as a 'pathfinder' for low carbon construction and has set out the ambitions and approach presented in paragraphs 1.1.3 and 1.1.4 of the report. • Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**] sets out the Applicant's approach to carbon within the DCO application. It explains how the Project represents a step change in approach

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		for a road scheme of this scale, in terms of the scope and nature of the measures which the Applicant is committing to deliver to reduce emissions during the construction and operation of the new road. • Chapter 4 of the Planning Statement [**APP-495**] describes the strategic need for the Project and the benefits it will deliver (referring back to Need for the Project [**APP-494**]) and Chapter 8 presents consideration of the 'planning balance' which weighs the impacts the Project will create (taking into account the proposed mitigation of those impacts) and the benefits it will deliver in the context set by Government policy including the need to achieve sustainable development. • Taken together this evidence demonstrates that the Applicant has carefully considered alternatives and that it is taking an appropriate and sustainable approach to the delivery of the Project and one which accords with the principles of sustainable development set out in relevant Government policy. **Impacts to Biodiversity** • The loss of ancient woodland within Kent as a result of the Project would be 5.35ha, including woodland within Shorne Woods and Claylane Wood, with an area of 48.75ha proposed as ancient woodland compensation planting. In Essex these figures are 1.57ha ancient woodland loss and 32.00ha of ancient woodland compensation planting proposed. The total Project figures are 6.92ha ancient woodland lost and 80.75ha of ancient woodland compensation planting proposed. These figures are reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**], Table 8.31 and Table 8.35. These tables also detail the loss and gain in habitat areas for all other habitats affected by the Project. • The figure reported in paragraph 8.9.3 of 7.62ha is an error taken from a previous design iteration and has now decreased following design iterations to 6.92ha. • The design of the ancient woodland compensation planting did not focus on meeting loss:gain ratio targets but works to link into existing high quality woodland habitat such as Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI), Great Crabbles Wood SSSI and Jeskyns Community Woodland. The objective, following guidance from the Defra family and agreed with Natural England, is to provide landscape-scale planting, creating new areas of high quality woodland habitat to build and strengthen coherent ecological networks within the wider landscape. • Potential impacts from the Project on South Thames Estuary and Marshes SSSI, particularly those resulting from dust deposition and changes in water quality and levels, are reported within paragraphs 8.6.19 to 8.6.23 in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. It reports that hydrological connectivity between the Project's construction and operation and the SSSI is unlikely and reduced water levels not predicted. This is detailed in ES Appendix 14.5: Hydrogeological Risk Assessment [**APP-458** and **APP-459**].

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		• With respect to impacts on the Canal and Grazing Marsh Local Wildlife Site, notably the potential impacts from changes in hydrology, these are reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**], Table 8.29. • The effects of the Project on the Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site has been assessed and is reported within the Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. The Project includes mitigation, in the form of habitat enhancement at two locations, to reduce the effect of land take within functionally linked land during construction. The locations are at Coalhouse Point and three fields south of the Metropolitan Police firing range and adjacent to the SPA/Ramsar site. Both areas will be enhanced prior to commencement of construction as per commitments HR010 and HR007 as set out in the Register of Environmental Actions and Commitments within ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. This mitigation ensures that the functionality of that habitat, in maintaining the qualifying bird feature populations, is not reduced throughout construction. • Regarding the study area used for ecological receptors, this varies depending on the biodiversity feature being assessed. Statutory designated sites were assessed up to 2km from the Order Limits, with an expanded study area of 30km radius for European Sites designated for bats. For non-statutory sites, a 500m study area was employed. Where there is a potential direct hydrological link between a non-statutory site and the Order Limits, the ZoI was extended to 2km. Further details on the extent of the survey areas are presented within ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. • European sites have been assessed in accordance with the criteria set out in Section 5.1 of the Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment [**APP-487 and APP-488**]. • The cumulative effects of the Project in combination with other existing and/or approved developments and referred to as 'inter-project' effects are assessed within ES Chapter 16: Cumulative Effects Assessment [**APP-154**]. Section 8.7 within ES Chapter 8: Terrestrial Biodiversity [**APP-146**], considers cumulative effects on terrestrial biodiversity as a whole. **Biodiversity Net Gain** • There is currently no legislative mandate for Nationally Significant Infrastructure Projects to achieve a biodiversity net gain uplift of 10% or higher. The Project's biodiversity metric forecasts, reported in ES Appendix 8.21: Biodiversity Metric Calculations [**APP-417**], are based on the preliminary design and a number of limitations and assumptions (as detailed in Section 5 of that appendix) that have had to be made to allow a quantitative forecast of biodiversity unit change. It is considered that this assessment provides a realistic worst-case scenario of the likely performance of the Project in terms of net biodiversity, given the necessarily precautionary nature of the assumptions made. As stated within this technical appendix, the Project recognises that it would result in the loss

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		of irreplaceable habitats such as ancient woodland, and that this would prevent any overall claim of Biodiversity Net Gain for the Project (paragraph 1.1.10). **Mitigation and Compensation** • The mitigation hierarchy has been employed through the Project design and impact assessment process. This is reported in Section 8.5 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. The relevance and suitability of the measures reported in Section 8.5 are described within Section 8.6 of ES Chapter 8 and are reported against each ecological receptor and each relevant pathway to an effect. None of the measures proposed are considered untested or controversial. The landscape-scale approach to habitat creation, particularly around ancient woodland compensatory planting, open mosaic habitat and species-rich grassland creation, and nitrogen deposition compensatory planting, are designed to create new or strengthen existing links between habitats, benefiting biodiversity by building resilience into the wider habitat networks across the landscape. The design and location of green bridges along the Project have been developed to help maintain these networks, avoiding fragmentation and providing permeability across the Project. These have been individually designed to provide the greatest benefit at each particular crossing location, with reference given to the Landscape Institute Technical Note for Green Bridges (Landscape Institute, 2015).This is described within paragraph 8.5.8 in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. • The suitability of proposed mitigation for effects on European sites is reported in Section 7 of the Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. Each measure proposed within the assessment is considered in turn, including an assessment of the confidence in success. • The compliance with the mitigation hierarchy is explicitly reported in ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**]. Section 4 reports the overall compliance with the hierarchy and Sections 5, 6 and 7 report the considerations of avoidance, mitigation and compensation in turn. **Protected Species** • Regarding the record for one barbastelle bat (*Barbastella barbastellus*) pass recording during a transect survey of Brewers Wood, there was uncertainty around the species identification and, in a precautionary approach, was identified as a barbastelle. However, given the unexpected nature of this record, further analysis of the sonograph has been undertaken and it is no longer thought that this record should be attributed to this species. Instead it is considered more likely to be a common pipistrelle (*Pipistrellus pipistrellus*). This error will be identified within Environmental Statement Addendum [**Document Reference 9.8 (2)**] which has been submitted into the Examination at Deadline 2.

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		• This does not affect the overall valuation of the bat assemblage south of the River Thames which is assessed as being of County level importance (i.e. the geographic scale at which the loss of the bat assemblage would be felt would be a county level). It is considered that this baseline dataset is robust and allows the characterisation of potential impacts to be determined and the likely effect of those impacts to be assessed, as reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**], paragraphs 8.6.130 to 8.6.153. • Regarding the two sites Muggins Chalk Pit, and Hangman's Wood and Deneholes SSSI, these are included in Table 3.1 of ES Appendix 8.8: Bats [**APP-397**] as the Order Limits at the time of scoping these surveys was different to the Order Limits presented in this application. An assessment of likely significant effects on these two sites is made in paragraphs 8.6.141 and 8.6.144, and 8.6.232 – 8.6.234. No adverse effects are predicted on the bat assemblage associated with Hangman's Wood and Deneholes SSSI, and only limited disturbance from the short-term low impact nature of construction works around Muggins Chalk Pit. • An assessment of disturbance to bird assemblages, together with detail of any measures required to mitigate adverse effects are reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. Where birds are associated with European sites and relevant functionally linked land, this is detailed in Habitats Regulations Assessment - Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. **Climate Change** • ES Chapter 15: Climate [**APP-153**] presents an assessment of the likely significant effects of the Project on climate during both construction and operation. Paragraph 15.9.9 notes that, although total GHG emissions over the Project appraisal period (construction plus 60 years of operation) are approximately 6.596 million tCO_2e (as noted by the representor) this is reduced to between 2.324 million and 2.938 million tCO_2e as a result of the net zero policy of Government's Transport Decarbonisation Plan. Mitigation of the Project's effects on GHG emissions is explained in Section 15.5 of ES Chapter 15. In summary, paragraph 15.9.12 of ES Chapter 15 concludes that: '*The Project would fulfil both criteria used to determine that GHG emissions from the Project are considered* ***not significant****:* *a. The GHG emissions from the Project do not have a material impact on the ability of the Government to meet the carbon reduction targets.* *b. The Project is compatible with (or goes beyond) the budgeted, science-based 1.5°C trajectory of the Paris Agreement (in terms of rate of emissions reduction) and complies with up-to-date policy and 'good practice' reduction measures to achieve that.*' • As noted in paragraph 15.5.5 of ES Chapter 15: Climate [**APP-153**], the Applicant can influence but not control the emissions from user carbon. These emissions are addressed by wider Government policy, principally the

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		Transport decarbonisation Plan. Plate 15.4 of the chapter summarises the Project's Carbon Plan which is explained in full in the Applicant's Carbon and Energy Management Plan [**APP-552**]. **Air Quality** • The legislative requirements for air quality, including the Environment Act 2021 are described under Table 1.1 of ES Appendix 5.5: Air Quality Legislation and Policy [**APP-349**]. ES Chapter 5: Climate [**APP-143**] presents an assessment of the likely significant effects of the Project on air quality during both construction and operation. The Project is not expected to affect the UK's ability to comply with the Air Quality Directive (Directive 2008/50/EC) in the shortest possible timescales. **Nitrogen Deposition** • The assessment of the effects of nitrogen deposition on designated sites affected by changes to the wider network is included within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**, **APP-404**, **APP-405**, **APP-406**]. The assessments are summarised in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. The assessment of effects on European sites is included within the Habitats Regulations Assessment Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. • Background levels of nitrogen deposition, including the contribution from road traffic, exceed the critical loads for most habitats across most of the southeast of England. It is therefore not possible to select sites for mitigation and compensation for ecological effects in areas unaffected by nitrogen deposition. Site selection for mitigation and compensation has been undertaken to provide the most effective landscape scale measures with connectivity to existing and retained ecological features as a core criterion, therefore building resilience of ecological networks. While it is possible that the background nitrogen deposition may mean that the condition or quality of created habitats might not be quite as high as if they were created in the absence of such background nitrogen deposition, it is far preferable ecologically to create new semi-natural habitats within the ecological networks than to not do so because the option of some theoretical perfect habitat condition is not possible. The Applicant is confident that all proposed mitigation and compensation proposals will result in high quality habitats that achieve the objectives, and that background nitrogen deposition will not prevent successful delivery or result in significantly degraded habitats. • The 25 Year Environment Plan (Defra, 2019) was assessed under Table 1.3 of ES Appendix 8.23: Terrestrial Biodiversity Legislation and Policy [**APP-419**]. • The legislative requirements for air quality, including the Environment Act 2021 are described under Table 1.1 of ES Appendix 5.5: Air Quality Legislation and Policy [**APP-349**]. • ES Chapter 15: Climate [**APP-153**] presents an assessment of the likely significant effects of the Project on climate during both construction and operation.

REP1-278 RSPB

Rep ID	WR Submitter	WR/Applicant's Response
REP1-278	RSPB	**WR:** WR Link: **REP1-278**
		Applicant's Response: **1. Concerns regarding noise and visual disturbance of the Thames Estuary and Marshes Special Protection Area/Ramsar and FLL (paragraphs 2.1 – 2.5).** • With regard to the noise modelling, the Habitats Regulations Assessment – Screening Report and Statement to Inform an Appropriate Assessment (HRA) [**APP-487**] Figure 17 and 18 illustrate the potential disturbance from unmitigated construction noise & visual disturbance, and Figures 25 and 26 illustrate the potential disturbance from construction noise & visual disturbance with mitigation measures in place. Figure 21 illustrates the potential disturbance during operation. The assessment itself includes noise modelling to describe the predicted changes in noise during construction and operation and this is detailed within paragraphs 6.2.87 to 6.2.106 and paragraphs 7.2.22 to 7.2.52. • The measures relied upon to avoid and reduce the effects of noise and visual disturbance are described in Section 7.1 and include some detail on size. Any assumptions regarding design that are relied upon in the assessment are described in paragraphs 3.3.30 to 3.3.33 of the HRA [**APP-487**]. • The proposals for monitoring (including commitment HR009 from the Register of Environmental Actions and Commitments (REAC), within Environmental Statement Appendix 2.2: Code of Construction Practice [**REP1-157**]) are described within the HRA in paragraph 7.3.3 [**APP-487**]. • The detailed technical information requested the RSPB, including where required, cross sections, will be developed as necessary as the contractor develops their detailed design for construction of the Project. **2. Coalhouse point mitigation area water supply (paragraphs 2.6 – 2.10)** • The wetland habitat at Coalhouse Point has been secured in REAC commitments HR010 'Habitat enhancement in functionally linked land' and HR011 'Constraints to works to form the water inlet with self-regulating valve' which secure the water supply before the commencement of construction [**REP1-157**]. • The Applicant issued a technical note to Natural England on 20 July 2022 to outline the proposals for this water supply, and then provided a further update on 24 February 2023. Both parties continue constructive engagement on this matter and attended a site visit on 20 April 2023. The Applicant issued a more detailed technical note to

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		Natural England on 30 June 2023, which can be found at Annex C.13 of the Statement of Common Ground with Natural England submitted at Deadline 2 [**Document Reference 5.4.1.6 (2)**]. The latter technical note includes a description of any likely impacts on the Special Protection Area/Ramsar from the habitat creation works and concludes that a commitment to avoid the wintering bird season is not required. **3. Land at Shorne Marshes (paragraphs 3.1 – 3.3)** • The Applicant welcomes the continued engagement with RSPB on the detailed design of the reinstatement of the land at the Milton Compound.

REP1-298 Thurrock District Scout Council

Rep ID	WR Submitter	WR/Applicant's Response
REP1-298	Thurrock District Scout Council	**WR:** WR Link: **REP1-298**
		Applicant's Response: **Order limits reduction** 1.1.1 The Applicant has continued to constructively engage with Thurrock District Scout Council (TDSC) following submission of the DCO Application. Concerns were raised by TDSC about the proposed temporary possession and permanent rights proposed by the Applicant in the south-east corner of the Condovers site for utility works associated with a temporary foul water connection (Works No. MUT8) for the northern tunnel entrance compound (Works No. CA5). 1.1.2 The Applicant has reviewed the utility works proposed in this location in consultation with Anglian Water and has identified the opportunity to remove approximately 79m^2 of land from the Order Limits to address TDSC's concerns. TDSC could continue to use the area removed from the Order Limits as a result. Plot 23-31 will be superseded and given a new plot number on Sheet 23 of the Land Plans [**AS-010**] which will be updated to reflect this. Further information on this update, including its proposed timing in the context of the DCO examination, can be found in the Second Notification of Proposed Changes to the Planning Inspectorate [**PD-024**]. **Travel time** Chapter 8 of the Transport Assessment [**APP-529**] sets out the forecast impacts on journey times during the construction period on routes including Station Road/Fort Road/A1089, which would be relevant for people travelling to the Condovers Scout Activity Centre. The Transport Assessment identifies negative impacts on journey time only during the AM peak, for six out of the 11 phases of construction; no change in journey time has been assessed as being greater than 2.3 minutes (this is during Phase 3, for all other phases, increase in journey time is likely to be less than two minutes). The Traffic Management Forum, established and secured under the outline Traffic Management Plan for Construction (oTMPfC), will ensure ongoing monitoring and engagement on these impacts during the construction period [**REP1-174**].

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		Walking, cycling and horse-riding routes (Local Public Rights of Way (PRoW) and Permissive access) PRoWs within the immediate vicinity of the Condovers Scout Camp would not be affected by construction activities and would remain open during the construction period. Section 4.3 of Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] shows the WCH proposals close to the Condovers site. The effects on PRoWs are identified in Table 13.66 of ES Chapter 13: Population and Human Health [**APP-151**]. Regarding the permanent closure and diversion of BR58 and FP61, the Project includes provision for two temporary diversions of these routes, one along the proposed Muckingford Road (temp diversion 1) and one under the proposed Tilbury viaduct (temporary diversion 2). These are described at Table B.1 of the oTMPfC [**REP1-174**] and illustrated on Plate B.6 of the same document. Temporary diversion 1 is subject to Muckingford road being built and temporary diversion 2 is subject to construction and utility works in the Tilbury Viaduct area to ensure a safe access across the works. In the event that the works both temporary diversions are subject to occur concurrently, the existing route could be severed, with no diversion available, for up to 2.5 years. Temporary diversion routes are subject to the detailed construction phasing developed by the Contractor. In developing those plans the Contractor will develop temporary diversion routes, where required, seeking to reduce the period of time existing WCH routes are severed where no diversion is available. Temporary diversion routes will be subject to engagement with the relevant highway authority during development of the TMP, which is secured under Schedule 2 Requirement 10 of the draft DCO [**REP1-042**]. A summary of the Project's effects on BR58 and FP61 once operational is provided at paragraph 13.6.173 of ES Chapter 13: Population and Human Health [**APP-151**], which concludes the Project would have a moderate beneficial and significant impact on BR58 and FP61. With respect to the WCH route along Low Street Lane, paragraph 4.3.18 of Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] states that '…*to provide safe WCH access between these PRoWs there will be a WCH route behind the existing hedgerow on the northern side of Station Road*'. This would avoid any potential conflict between WCH and construction traffic using the secondary access route along Station Road. **Construction access route (Haul road north of Church Road and south of Muckingford Road**) A secondary construction access route is proposed north off Church Road to join Low Street Lane (shown on Plate 4.2 of the oTMPfC [**REP1-174**]) for access to the Low Street Lane ULH and Muckingford Road ULH. Assumptions about the amount of traffic likely to use the construction access routes proposed are set out in Chapter 8 of the Transport Assessment [**APP-529**]. These would be refined as contractors are appointed and the detailed design for the Project is developed.

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		'Secondary' construction access routes would be used by HGV traffic throughout construction but would be used far less frequently than the other routes. Given this secondary access route is principally intended for vehicles transiting between nearby worksites, the type of vehicles using it are envisaged to be limited to vans, minibuses and pickup trucks. It is anticipated that HGVs and other plant would be transported via the other routes promoted as shown on Plate 1.16 of Transport Assessment Appendix E: Construction Traffic Assessment Supporting Information [**APP-534**]. The secondary access route would remain in place for the entire construction period. 1.1.3 The hours of operation for the route would be in accordance with Table 6.1 of ES Appendix 2.2: Code of Construction Practice (CoCP) [**REP1-157**], with works outside of the standard working hours limited to the operations associated with the erection and removal of the overhead power lines (Work No OH3, OH4 and OHT2) and the trenchless installation of electricity networks (Work No MU28) as listed in Table 6.4. 1.1.4 A full preliminary list of traffic management measures (excluding hard shoulder closures and associated localised traffic management for highway gantries) that may be required to construct the Project can be found in Appendix A of the oTMPfC. Table 2.3 of the oTMPfC [**REP1-174**] identifies stakeholder considerations that would be addressed as a minimum by the TMP, which is secured under Schedule 2 Requirement 10 'Traffic Management' of the draft DCO [**REP1-042**]. This includes impacts on community facilities such as the Condovers site, and states that activities such as advance warning/particular sensitivity around significant events, particularly evenings and weekends would be incorporated into the TMP and engagement with relevant stakeholders would take place as appropriate. **Noise (Construction and Operation)** Noise monitoring was carried out by the Applicant for the Project 200m east of the Condovers site south of Station Road at ST-NML 04. The monitoring location is show in ES Figure 12.5: Baseline Noise Monitoring Locations [**APP-313**]. The results are presented in ES Appendix 12.5: Baseline Noise Survey Information (Section 2.4) [**APP-445**]. While construction phase noise impacts were not modelled at the Condovers site specifically, two sensitive receptors at nearby properties off Coopers Shaw Road (CN 46) and Church Road (CN 50) were assessed. This is presented in ES Figure 12.1: Construction Noise and Vibration Study Area [**APP-309**] and ES Chapter 12: Noise and Vibration [**APP-150**]. With the inclusion of the mitigation measures in the CoCP and Register of Environmental Actions and Commitments (REAC) [**REP1-157**], construction noise impacts on the site (when considered in accordance with the guidance contained within the Design Manual for Roads and Bridges (DMRB) LA 111 (Highways England, 2020) and BS 5228-1:2009 Code of practice for noise and vibration control on construction and open sites[4]) would not constitute a significant effect.

[4] British Standards Institution (2014a). BS 5228-1:2009 (+A1:2014): Code of practice for noise and vibration control on construction and open sites. Noise. London: British Standards Institution.

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		Furthermore, the REAC, contained within the CoCP [**REP1-157**], presents good practice and essential mitigation commitments secured under Schedule 2 Requirement 4 of the draft Development Consent Order (DCO) [**REP1-042**]. Specific commitments with regard to construction noise include commitments NV001, NV002, NV004, NV006, NV007 and NV009. These would be implemented to actively control the impacts of the construction of the Project. NV008 'Community Engagement' specifically sets out a mechanism for the open and ongoing communication with the local community relating to the construction activities and programming, and the control of potential impacts. Following on from the consultation under NV008, with regard to the request for baseline to be established, commitment NV005 'Baseline noise levels' provides a mechanism for this to be considered prior to construction. During operation of the Project, the mitigated road traffic noise impacts (when considered in accordance with the guidance contained within DMRB LA 111) are predicted to be minor to moderate adverse across the Condovers site. Within ES Chapter 12: Noise and Vibration [**APP-150**] the specifics of the mitigation options proposed are presented in section 12.5 which covers the provision of Low noise surfacing, earthworks measures and acoustic fencing in order to control road traffic noise. ES Figure 12.6: Operational Road Traffic Noise Mitigation [**APP-314**] presents the locations of mitigation provision. ES Appendix 2.2: CoCP [**REP1-157**] and within it, the REAC, sets out how these measures are secured under Schedule 2 Requirement 4 of the draft DCO [**REP1-042**]. As detailed on ES Figure 12.6: Operational Road Traffic Noise Mitigation [**APP-314**] there is provision for an acoustic barrier over the Tilbury viaduct structure within the proposed design for the Project. This is secured under Schedule 2 Requirement 3 'Detailed design' of the draft DCO [**REP1-042**]. **Air quality (Construction and Operation)** Air quality effects during construction and operation have been considered in accordance with DMRB LA 105 Air Quality (Highways England, 2015) and are described in ES Chapter 5: Air Quality [**APP-143**]. Project specific baseline monitoring was carried out by the Applicant 150m east of the Condovers site on Church Lane at site LTC12 (presented on page 23 of Figure 5.4 in ES Figure 5.3: Operational Study Area (2 of 3) [**APP-173**]. The results indicated that during 2016 the annual mean nitrogen dioxide (NO2) concentration was 24.9µg/m^3 which is well below the relevant annual mean Air Quality Strategy (AQS) objective of 40µg/m^3. While construction phase impacts from vehicle emissions were not modelled at the Condovers site, two sensitive receptors at nearby residential properties on Church Road approximately 150m east were assessed (LTC_Con_040 and LTC_Con_041) and can be used as a proxy for impacts at the Condovers site as these receptors are located closer to the construction traffic using Church Road. The modelled change in air pollutant concentrations was

[5] Highways England (2019). Design Manual for Roads and Bridges, LA 105 Air Quality. https://www.standardsforhighways.co.uk/tses/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true

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		predicted to be imperceptible at LTC_Con_040 and LTC_Con_041 in each year of construction (this is presented in ES Figure 5.5: Construction Traffic Receptors and Results (1 of 2) (pages 14, 16, 37, 39, 60 and 62) [**APP-178**]; ES Figure 5.5: Construction Traffic Receptors and Results (2 of 2) (pages 83, 85, 106, 108, 129 and 131) [**APP-179**]; and ES Appendix 5.3: Air Quality Construction Phase Results (Tables 1.1 to 1.6) [**REP1-161**]). Construction phase air quality impacts also have the potential to arise at the Condovers site because of construction dust and emissions from non-road mobile machinery. With the implementation of the mitigation measures outlined in the REAC within ES Appendix 2.2: CoCP [**REP1-157**], which are considered appropriate for the nature of likely impacts generally and the Condovers site specifically, there are anticipated to be no significant air quality effects at the site during construction, which is consistent with the overall conclusions of the Project-wide air quality effects during the construction phase reported in ES Chapter 5: Air Quality [**APP-143**]. During the operational phase, the Condovers site falls outside of the air quality study area as it is located beyond 200m of any road and therefore meeting the traffic scoping criteria for air quality assessment as stipulated by DMRB LA 105 (Highways England, 2019). For this reason, the potential for air quality impacts during the operational phase has been scoped out at this location and it can be reasonably assumed that the operational phase impacts of the Project at the Condovers site would be negligible. Therefore, no monitoring of operational air quality effects at the Condovers site is considered necessary. **Proposals for the Tilbury area (Tilbury area Redesign of tunnel maintenance access**) The Project must be designed in detail and constructed in accordance with the preliminary scheme design included in the DCO application, should it be granted by the Secretary of State. This is secured under Schedule 2 Requirement 3 'Detailed design' of the draft DCO [**REP1-042**]. Other developments promoted in the Tilbury area would be subject to a separate consenting and decision-making process. **Tilbury Fields** On completion of construction in the opening year, the sculptural landscape mounding in Tilbury Fields would be just about discernible in mid-range views south-east from the Condovers site, filtered by existing vegetation. The proposed landforms at Tilbury Fields would be 24m AOD at their tallest point as set out in the Engineering Drawings at Sheet 4 of Engineering Drawings and Sections (Volume A) (A122 LTC Plan and Profiles) [**APP-030**]. This is repeated at Design Principle S9.02 [**APP-516**] which states '*The design of the new recreational site shall incorporate sculptural earthworks up to a maximum +24.0m AOD*…'. This is secured under Schedule 2 Requirement 3 'Detailed design' of the draft DCO [**REP1-042**].

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		The Project provides for accessible permissive routes through Tilbury Fields, instead of Public Rights of Way, to retain some flexibility because the design of the landforms would be refined during the detailed design stage once a contractor is appointed within the constraints of the limits of deviation and relevant DCO controls. The Applicant provided clarification about the proposed tunnel construction methodology for the Project in the Notification of Proposed Changes to the Planning Inspectorate [**AS-083**]. The Applicant has provided further information on the proposed tunnel construction methodology, including the flexibility sought with regard to the use of one or two TBMs alongside this document at Deadline 2, as Appendix C of Environmental Addendum [**Document Reference 9.8 (2)**]. Tilbury Fields would be open to the public at the earliest practicable time following the completion of the Project subject to construction requirements and the establishment of new habitats. This is independent of the TBM strategy.

REP1-302 Transport Action Network

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REP1-302	Transport Action Network	**WR:** WR Link: **REP1-302**
		Applicant's Response: *In response to the need for the Project, the planning balance and value for money:* Chapter 3 of Need for the Project [**APP-494**] demonstrates how the strategic need for the Project has been recognised and identified in national, regional and local level policy documents. It sets out the need for development in accordance with the National Policy Statement for National Networks (NPSNN), the Government's policy and strategic vison and objectives. Chapter 6 of the Planning Statement [**APP-495**] assesses the potential benefits and adverse effects of both the construction and operation of the Project to demonstrate accordance with National Policy Statements (NPSs) for National Networks and Energy. Chapter 7 gives consideration to a number of 'other matters' including the NPS for Ports, the National Planning Policy Framework and local development plan policy. Chapter 8 describes the planning balance, which weighs in detail the adverse impacts against the benefits of the Project. It concludes at paragraph 8.7.34 that: '*In light of all of the above, it is the Applicant's view that there is a clear, overriding and compelling case in the public interest for the Project. Accordingly, the policy presumption in favour of the Project and the overall planning balance lie strongly in favour of the grant of development consent.'* The Project is intended to maximise national and local benefits and provide value for money for taxpayers. Achieving value for money is one of the Scheme Objectives and a Value for Money (VfM) assessment has been carried out. As detailed in Need for the Project [**APP-494**] it represents positive value for money as the substantial benefits of the Project outweigh the costs. The Economic Appraisal Report (EAR) within Appendix D: Economic Appraisal Package of the Combined Modelling and Appraisal Report (ComMA) [**APP-526**] describes the methodologies used to appraise the economic, environmental, social benefits, disbenefits, revenues and costs of the Project and presents the appraisal results. The appraisal informs the Project's VfM assessment. The appraisal, which uses outputs from the Lower Thames Area Model transport model, aligns with the principles in HM Treasury Green Book (HM Treasury, 2022) and is based on the methodologies in the DfT's Transport Analysis Guidance (TAG).

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		The appraisal undertaken is fully in line with DfT's transport analysis guidance and demonstrates that the Project would provide positive value for money. This is summarised within the Combined Modelling and Appraisal Report (ComMA) [**APP-518**] and in more detail within ComMA Appendix D [**APP-524** to **APP-527**]. A reliability appraisal is contained within Section 9.2 of the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [**APP-526**]. This concludes that the Project would result in £487.1m (in 2010 prices) of reliability benefits for the core traffic growth scenario. Table 9.5 of the Economic Appraisal Report shows that there would be benefits across all of the 10 time periods assessed. ***In response to the increase in accidents:*** The Lower Thames Crossing is being designed to the requirements set out in National Highways' Design Manual for Roads and Bridges GD 300: 'Requirements for new and upgraded all-purpose trunk roads expressways)', which introduces best-in-class safety design and technology interventions for a dual carriageway A-road. The Transport Assessment [**APP-529**] predicts that over the study area as a whole there would be a decrease in the number of accidents per vehicle kilometre driven, but due to the increase in the total number of vehicle kilometres driven as a result of the Project there is predicted to be an overall increase in the number of accidents. ***Climate and de-carbonisation In response to the missing greenhouse gas (GHG) worksheet:*** In agreement with the Department for Transport (DfT), and in line with the requirement for all National Highways schemes from 1 April 2022, National Highways Carbon Valuation Toolkit version 1.4.2 was used to value, and report the appraisal of, all greenhouse gas (GHG) emissions (i.e. road user tailpipe and embodied GHG emissions) rather than the Transport Analysis Guidance (TAG) GHG workbook, as such the Applicant has not provided an outdated workbook. ***In response to the GHG emissions presented in ES Chapter 15: Climate* [APP-153]:** To assist the decision maker in understanding the potential effects of the Project, the Applicant has presented three scenarios to give a range of credible outcomes in terms of net emissions arising from the Project. Each scenario has been put into context with the relevant UK carbon budget. Table 15.17 of ES Chapter 15: Climate [**APP-153**] includes a conservative scenario using EFT v11 which does not reflect existing net zero policy and electric vehicle uptake rates. The table also includes two further scenarios which present an upper and lower bound of the TDP implementation and its likely impact on vehicle emissions. In addition to an assessment against the national budgets, the Applicant has also provided a contextualisation in terms of alignment with the net zero trajectory as per the Institute of Environmental Management & Assessment (IEMA) guidance 'Assessing greenhouse gas emissions and evaluating their significance' (IEMA, 2022). This is described in full in paragraph 15.6.5 of ES Chapter 15: Climate

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		[APP-153]. The assessment concludes that the GHG emissions from the Project would not have a material impact on the ability of the Government to meet its carbon reduction targets, and are therefore not significant in EIA terms. ***In relation to the Climate Change Committee's progress report to Parliament, published on 28 June 2023*** The Applicant awaits the UK Government's response to the recommendations set out in the Progress Report and will continue to support the DfT in decarbonising the surface transport sector. The Applicant has set out its own pathway to supporting the DfT's decarbonisation of the surface transport sector through the publication of their 2021 plan 'Net Zero highways: Our 2030, 2040 and 2050 plan' (National Highways, 2021). Specifically for the Lower Thames Crossing, the Project has set out an industry-leading position in terms of driving out carbon in the preliminary design and setting a framework to continue to reduce its carbon impact through the commitments made in the Carbon and Energy Management Plan, which is one of three documents addressing carbon reduction in the DCO Application: • ES Chapter 15: Climate [APP-153] • Planning Statement Appendix I: Carbon Strategy and Policy Alignment [APP-504] • Carbon and Energy Management Plan [APP-552]. ***In response to alternatives:*** Annex B.2 of Post-event submissions, including written submission of oral comments, for ISH1 [REP1-183], addresses the Applicant's consideration of the role that other transport modes, including rail, might play in addressing congestion at the Dartford Crossing. It explains that a new road crossing of the River Thames is considered to be the only feasible and deliverable option to relieve the congested Dartford Crossing. Section 5.3 of Chapter 5 of the Planning Statement [APP-495] explains how the Project has considered alternative modes of transport in its development. It concludes at paragraph 5.3.23 that '*the need for the Project, stemming from existing congestion at the Dartford Crossing, cannot be resolved by provision of a new rail crossing, provision of a ferry service, or provision of active travel measures. While road-based public transport may be a contributory element to the solution, this is not achievable without the provision of a new road crossing*.' This conclusion reflects the assessment carried out by the DfT in 2009, which found that, accounting for both passenger and freight provision, the inclusion of rail infrastructure within the Project would not provide value for money. In 2022, the Applicant reviewed this assessment against current planning policy and considers that this conclusion remains valid. The Project makes considerable additional provision for new accessible transport measures in terms of walkers, cyclists and horse riders as identified at paragraph 7.5.40 of the Health and Equalities Impact Assessment [APP-539].

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		The overall conclusion is that the Applicant has taken a robust and comprehensive approach to the assessment of alternatives, which accords with the requirements of paragraphs 3.3, 4.26 and 4.27 of the NPSNN. The preferred option, which is the subject of this DCO application, represents the optimal solution and the only reasonable alternative to deliver the Scheme Objectives and meet the need for the Project. ***In response to biodiversity:*** Transport Action Network states, '*The impact on biodiversity has been categorised as Very Large Adverse*'. This is incorrect. Although the effects on two ancient woodlands from changes in air quality have been categorised as *very large adverse,* this does not represent an overall assessment of effects from the Project on terrestrial biodiversity. The full assessment of likely significant effects on terrestrial biodiversity, including all appropriate and proportionate mitigation and compensation measures to offset adverse effects, is reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. ***In response to air quality:*** In response to Transport Action Network's comment '*There would be an increase of 89,786 tonnes of NO2 over the 60 year appraisal period, and 64,450 tonnes of PM2.5*', this is incorrect as these values are the change in the assessment net scores for each pollutant rather than the change in emissions (tonnes), and represent the aggregated Project related change in concentrations across all properties in the study area following the Department for Transport's (DfT's) Transport Analysis Guidance (TAG) Unit A3 environmental impact appraisal approach. As stated in Section 4.8 of the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Appraisal Summary Table Report [**APP-524**], overall there is an increase in NO_2 and $PM_{2.5}$ concentrations and emissions with the Project which is likely to be because of an increase in vehicle kilometres travelled. Emissions for 2030 have been used for the design year as these are the latest emission factors available. As such this is likely to lead to an overprediction of emissions, as beyond 2030 vehicle emissions will be cleaner with the introduction of ultra low emissions vehicles, such as electric vehicles. ***In response to compulsory acquisition*** The Applicant is confident that the powers of Compulsory Acquisition and Temporary possession are necessary, proportionate and justified in accordance with all Statutory and Policy Guidance. The Statement of Reasons [**REP1-049**] sets out the Applicant's case for Compulsory Acquisition powers. Section 5 of that document details why the Applicant is satisfied that the conditions of section 122(3) of the Planning Act 2008 are met and there is a compelling case in the public interest for Compulsory Acquisition.

REP1-306 and REP1-307 Woodland Trust

Rep ID	WR Submitter	WR/WR Extract/Applicant's Response
REP1-306	Woodland Trust	**WR:** WR link 1: **REP1-306** WR link 2: **REP1-307 (duplicate)**
		WR Extract: **2. Woodland Trust Position on the Lower Thames Crossing Scheme** 2.1. The Woodland Trust works to protect the UK's ancient woods and ancient and veteran trees from direct loss and damage. As such, the Woodland Trust's charitable aims are adversely affected by the proposed Lower Thames Crossing scheme. 2.2. The Trust has held an objection to the Lower Thames Crossing scheme since 2016 on account of the potential for loss and deterioration of ancient woodlands, veteran trees, the Trust's own Ashenbank Wood site, and unacceptable greenhouse gas emissions associated with the scheme. 2.3. The Trust has engaged with National Highways' Lower Thames Crossing project team since 2016, and over the past seven years, has continued to object to the various iterations of the scheme that have been put forward. Through engagement with the project team and participation in several consultations, the Trust has made it clear that the impact of the scheme on the natural environment and climate is unacceptable. 2.4. While reductions of impact on irreplaceable habitat have been enabled through engagement and consultation with National Highways, the impacts of the scheme remain of great concern to the Trust. In the below response, we have provided further detail on our concerns regarding impact on irreplaceable habitats and climate, and provided a conclusion of our position of objection to this scheme.
		Applicant's response to paragraphs 2.1 to 2.4 The comments of the Woodland Trust are noted, the Applicant has no further response.
		WR Extract: **3. Woodland Trust Campaign Actions and Petitions** 3.1. In addition to the Trust objecting to the scheme since 2016, the Trust has also run several campaign actions to demonstrate the public's opinion of the scheme to National Highways and the widely-held concerns regarding the unacceptable impacts on irreplaceable habitat; among other concerns often specific to individual consultations. The

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		Trust ran four campaign actions over the course of 2016 to 2022 (in 2016, 2018, 2020 and 2022) in response to the various public consultations launched by National Highways. National Highways' consultations concerned the various iterations of the scheme, each with their own specific issues. 3.2. However, there have always been three underlying issues for the Trust and its supporters. Through each consultation, the Trust and its supporters have raised concerns regarding the following: highly adverse impacts on irreplaceable habitats (ancient woodlands and ancient and veteran trees); hugely significant carbon emissions; and a lack of transparency that has plagued the project up to the Development Consent Order (DCO) submission. 3.3. Over the course of 2016-2022, 13,071 actions were taken by members of the public as part of four public campaign actions. Each online action generated an email to National Highways as a response to the respective consultation and constituted an objection to that particular consultation. Supporters were able to edit those emails to provide their own thoughts. 3.4. Over the course of 2022-23, the Trust then ran an online petition action for the public to show their support for the Trust's concerns and to show the Planning Inspectorate and Secretary of State for Transport that the Lower Thames Crossing scheme is unacceptable due to: • Its negative impacts to ancient woodland and veteran trees • The deeply troubling carbon impacts and nitrogen-based pollution • The lack of transparency around the scheme 3.5. In total, 12,444 people signed this petition to demonstrate their support for the Trust's concerns and to show that they similarly shared these concerns. Many of the petition signatories are based in south-east England, though the petition reach has been extensive with people from all over the UK having taken the action to show opposition to the Lower Thames Crossing scheme. 3.6. Taking into account all of the objections to the scheme through the Trust's campaign actions and most recent petition, a total of 25,515 action have been taken by members of the UK public to demonstrate opposition to the scheme. The Trust considers that this depth of opposition must be recognised and taken into account by the Planning Inspectorate and Secretary of State for Transport when deciding on the outcome of this scheme.
		Applicant's response to paragraphs 3.1 to 3.6 The Applicant understands the remit of the Woodland Trust and is aware of the campaigns they have intitated. The application includes the creation of new publically accessible openspaces, environmental mititgation and compensation planting, with an ambition to plant over 1 million trees across the Project.
		WR Extract: **4. Ancient Woodland**

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		4.1. Natural England and Forestry Commission have jointly published 'standing advice' for ancient woodland, ancient trees and veteran trees, which is intended for use in planning matters and by decision-makers. Within the standing advice, ancient woodland is defined as: "any area that's been wooded continuously since at least 1600 AD. It includes: ancient semi-natural woodland mainly made up of trees and shrubs native to the site, usually arising from natural regeneration; and plantations on ancient woodland sites - replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi. They have equal protection in the National Planning Policy Framework (NPPF)." 4.2. The standing advice goes on to further describe other forms of ancient woodland: "Other distinct forms of ancient woodland are: wood pastures identified as ancient; and historic parkland, which is protected as a heritage asset in the NPPF. Many of these do not appear on the ancient woodland inventory (AWI) because their low tree density does not register as woodland on historic maps. You should consider wood pastures identified as ancient in the same way as other ancient woodland when making planning decisions. 'Wooded continuously' does not mean there's been continuous tree cover across the whole site. Not all trees in the woodland have to be old. Open ground, both temporary and permanent, is an important component of ancient woodlands." 4.3. In May 2022, the Government published an updated policy statement on ancient woodland, entitled 'Keepers of Time: ancient and native woodland and trees policy in England'[2] . The Government's Keepers of Time policy reflects the importance of ancient woodland well, stating: "Ancient woodlands, ancient wood pastures and parkland and ancient and veteran trees are irreplaceable habitats which must be protected. Their longstanding presence, species and form serve as a rich cultural record of past management practices." 4.4. As a result of its great age, ancient woodland is characterised by a unique, complex and irreplaceable ecosystem of plants and animals, both above ground and in the soils. It is therefore impossible to recreate the ecosystem of an ancient woodland by planting new woodland, as widely recognised by experts and also within the aforementioned standing advice. England's ancient woodlands and trees represent a living cultural heritage, a natural equivalent to our great churches and castles. They are also one of our richest terrestrial wildlife habitats and are highly valued by people as places of tranquillity and inspiration. 4.5. Ancient woodland is an irreplaceable resource of great importance for its wildlife, soils, recreation, cultural value, history and the contribution it makes to our diverse landscapes. It is a scarce and threatened resource, covering only 2.5% of England's land area, and has a high level of protection in planning policy. Ancient woodland can have historical and archaeological significance on account of their long history of human association which often results in them becoming a source of inspiration for local culture and folklore. 4.6. Ancient woodlands provide homes for many of our rarest animals, such as the Bechstein's bat, which is one of the UK's rarest mammals and is listed as near threatened on the International Union for Conservation of Nature

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		(IUCN) red list. Bechstein's bats roost in old trees all year round and as such are intimately associated with ancient woodland, as are numerous other important UK species such as saproxylic invertebrates (which are entirely dependent on the deadwood habitat associated with older trees). Planting new woodland as compensation to replace ancient woodland will not benefit species such as Bechstein's bat and saproxylic invertebrates for many decades. 4.7. A large proportion of ancient woodland is recorded on the Ancient Woodland Inventory (AWI) held by Natural England. The inventory is the most accurate database available for identifying ancient woodland. However, the inventory is considered provisional as information and evidence may become available that shows that woods not currently registered on the inventory are likely to be ancient or vice versa. A project is currently underway to update the inventory, and support the identification of small ancient woodland sites in particular (including those under 2ha in size that were likely not recorded in the Government's initial recording process).
		Applicant's response to paragraphs 4.1 to 4.6 The Applicant understands and acknowledges the importance, value of ancient woodland and Veteran Trees. The effects of the Project on Terrestrial Biodiversity have been assessed within Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity [**APP-146**] including assessments of designated areas, such as Sites of Special Scientific Interest (SSSIs), and ancient woodlands and veteran trees. It is explained in Section 8.3 of ES Chapter 8 that the assessment has regard to both direct and indirect impacts, including severance or fragmentation of habitats or wildlife corridors. ES Chapter 8 describes the magnitude of the impacts, and the measures proposed to avoid, reduce, and compensate for the effects on sensitive ecological receptors, including ancient woodland and veteran trees.
		WR Extract: **5. Ancient and Veteran Trees** 5.1. Ancient and veteran trees are also irreplaceable habitats and afforded a high level of protection in planning policy. Ancient and veteran trees possess unique features which provide a rich and diverse range of habitats, playing host to countless other species. In particular, many rare invertebrate, fungi and lichen species are dependent on the decaying wood provided by such trees. They are also an essential part of our landscape and cultural heritage. 5.2. The National Planning Policy Framework (NPPF) defines an ancient or veteran tree as: "A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value". It does not provide a separate definition for ancient trees and veteran trees.

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		5.3. Natural England and Forestry Commission's standing advice for ancient woodland, ancient trees and veteran trees does, however, provide separate definitions for ancient trees and veteran trees. Regarding ancient trees it states: "An ancient tree is exceptionally valuable. Attributes can include its: great age, size, condition, biodiversity value as a result of significant wood decay and the habitat created from the ageing process, cultural and heritage value. Very few trees of any species become ancient." Regarding veteran trees it states: "A veteran tree may not be very old, but it has significant decay features, such as branch death and hollowing. These features contribute to its exceptional biodiversity, cultural and heritage value. All ancient trees are veteran trees, but not all veteran trees are ancient. The age at which a tree becomes ancient or veteran will vary by species because each species ages at a different rate." 5.4. The Planning Practice Guidance (PPG) for Natural Environment provides additional clarity on the status of ancient and veteran trees. It states: "Ancient trees are trees in the ancient stage of their life. Veteran trees may not be very old but exhibit decay features such as branch death or hollowing. Trees become ancient or veteran because of their age, size or condition. Not all of these three characteristics are needed to make a tree ancient or veteran as the characteristics will vary from species to species." 5.5. As with ancient woodland, Government's 'Keepers of Time' policy expresses the importance of ancient and veteran trees: "Ancient and veteran trees are rich in biodiversity. They provide food, shelter and breeding sites to large numbers of species including birds, bats, fungi and insects, which are often restricted in their distribution. They can be found both inside and outside of woodlands." 5.6. Many ancient and veteran trees are recorded on the Ancient Tree Inventory (ATI). Established in 2003, the ATI is a tree-recording partnership between the Tree Register, the Ancient Tree Forum and the Woodland Trust. Ancient and veteran trees are recorded, measured, photographed and made accessible on an interactive map. The ATI is a living database almost entirely populated by volunteers. Although much progress has been made, the ATI is currently incomplete, and it is estimated that the vast majority of ancient and veteran trees within the UK remain unrecorded. This highlights the necessity of project-level mapping to assess for the presence of ancient and veteran trees.
		Applicant response to paragraphs 5.1 to 5.6 The Applicant understands the ecological value of the irreplaceable resource and habitat provided by ancient woodland and veteran trees, as stated above the Project has sought to reduce its impact on ancient woodland and veteran trees, where impacts are unavoidable, the project offers compensation measures secured through the Code of Construction Practice (CoCP including the REAC) [**REP1-157**] and outline Landscape and Ecological Management Plan (oLEMP) [**REP1-173**].

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		WR Extract: **6. Government Policy Related to Irreplaceable Habitats** 6.1. In June 2022, the UK Government coordinated a statement supported by 46 other countries calling on the international community to "halt and reverse biodiversity loss globally and adopt the '30by30' target to protect at least 30 per cent of land and ocean by 2030". The UK government has committed to implementing this target in a domestic setting. 6.2. Strong environmental protections through planning policy, and policy relating to major infrastructure, are an essential means of acting on this commitment. In the absence of strong protections that are applied consistently across planning regimes, it will not be possible to turn this commitment into reality on the ground. 6.3. The aforementioned 'Keepers of Time' policy sets out the Government's view that: "Ancient woodlands, ancient wood pastures and parkland and ancient and veteran trees are irreplaceable habitats which must be protected" and that "Protecting and managing ancient trees and woodlands while expanding and connecting them with new native woodlands is vital." 6.4. This statement also reiterates a number of commitments to strengthen the level of protection afforded to ancient woodland in England, which were originally made in 2021, including to: • "undertake a review of the National Planning Policy Framework to make sure it is correctly implemented for ancient woodland and ancient and veteran trees. The Government will also strengthen guidance if needed and consult on stronger wording to better protect ancient woodlands, • require local planning authorities to consult the Secretary of State for Levelling Up, Housing and Communities before granting planning permission for developments affecting ancient woodland, • "update the Ancient Woodland Inventory to cover the whole of England. This will include mapping smaller ancient woodland sites of 0.25 hectares and introducing a new category for ancient wood pasture and parkland and infilled ancient wood pasture and parkland". 6.5. The National Planning Policy Framework (NPPF), the overarching planning policy document for England, states in paragraph 180(c) that: "development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists". 6.6. While we recognise that the NPPF is not intended to provide the decision-making framework for National Infrastructure Planning, as is the process for determining the outcome of the Lower Thames Crossing, it is important

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		to ensure that a project of such magnitude and with such significant adverse impacts is not seen to undermine the current policy direction of strengthening protection for ancient woodland. 6.7. Government policy recognises that ancient woodland and veteran trees are irreplaceable and therefore that their loss or damage cannot simply be rectified through mitigation or compensation measures. Natural England and Forestry Commission's standing advice states the following regarding the irreplaceability of these habitats: "Ancient woodland, ancient trees and veteran trees are irreplaceable. Therefore, you should not consider proposed compensation measures as part of your assessment of the merits of the development proposal." 6.8. The standing advice is clear that the protection afforded to ancient woodland includes ancient-semi natural woodland (ASNW), plantations on ancient woodland sites (PAWS), and ancient wood pasture. It also clarifies that the condition of an ancient woodland or tree should not be taken into account when assessing the merits of a development proposal: "Where a proposal involves the loss or deterioration of ancient woodland or ancient or veteran trees you should not take account of the existing condition of the ancient woodland or ancient or veteran tree when you assess the merits of the development proposal. Its existing condition is not a reason to give permission for development. A woodland or tree in poor condition can be improved with good management." 6.9. The current version of the National Networks National Policy Statement (NNNPS), which applies to major road and rail projects brought forward through the nationally significant infrastructure project regime under the Planning Act 2008, states that: "The Secretary of State should not grant development consent for any development that would result in the loss or deterioration of irreplaceable habitats including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the national need for and benefits of the development, in that location, clearly outweigh the loss." 6.10. Since the publication of the NNNPS in 2014, the wording of the NPPF has been significantly strengthened in relation to ancient woodland. The NNNPS is currently under review, and the Trust is advocating for the updated NNNPS to be strengthened in order to close the widening gap between protection afforded to different types of development. This would be consistent with the direction of travel outlined in the recent 'Keepers of Time' policy statement (see paragraphs 6.3 and 6.4 above).
		Applicant's response to paragraphs 6.1 to 6.10 The Applicant has carefully considered the impact of the Project upon ancient woodland and veteran trees throughout the route selection process and consideration of alternatives as set out in the Planning Statement Chapter 5 [**APP-495**]. The project has also been considered against NPSNN paragraph 5.32 as set out in paragraphs 6.5.77 to 6.5.84 of the Planning Statement [**APP-495**] concluding that *"the national need and benefits which would be delivered by the*

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		Project (which has sought to minimise impacts and build in biodiversity resilience in the longer term) clearly outweigh the loss of ancient woodland and veteran trees... The Project, therefore, accords with NPSNN paragraph5.32." (paragraph 6.5.84). As set out in Section 7.3 of the Planning Statement [**APP-495**] the Applicant has had due consideration to the NPPF where it is relevant and directed to do so by the NPSNN. The policy requirement in NPPF paragraph 180(c) *"...unless there are wholly exceptional reasons[63]…"* is clarified by footnote 63 which states: *"For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat."* As set out above, the Applicant considers that the national need and benefits of the Project clearly outweigh the loss of ancient woodland and veteran trees. The Project, therefore, accords with NPSNN paragraph 5.32 and NPPF paragraph 180(c).
		WR Extract: **7. Impact of the Proposed Scheme on Ancient Woodland** 7.1. Development can impact on ancient woodland in a number of ways, with impacts able to occur within both the operational and construction phases of any given scheme. The impacts that ancient woodland may be subject to are varied though can broadly be categorised into two main types: direct effects and indirect effects. 7.2. Natural England and Forestry Commission's standing advice details the typical direct effects that may occur from development as follows: "Direct effects of development can cause the loss or deterioration of ancient woodland or ancient and veteran trees by: • damaging or destroying all or part of them (including their soils, ground flora or fungi) • damaging roots and understorey (all the vegetation under the taller trees) • damaging or compacting soil • damaging functional habitat connections, such as open habitats between the trees in wood pasture and parkland • increasing levels of air and light pollution, noise and vibration • changing the water table or drainage • damaging archaeological features or heritage assets • changing the woodland ecosystem by removing the woodland edge or thinning trees - causing greater wind damage and soil loss"

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		7.3. The standing advice then goes on to detail the indirect effects arising from development: "Indirect effects of development can also cause the loss or deterioration of ancient woodland, ancient and veteran trees by: • breaking up or destroying working connections between woodlands, or ancient trees or veteran trees - affecting protected species, such as bats or wood-decay insects • reducing the amount of semi-natural habitats next to ancient woodland that provide important dispersal and feeding habitat for woodland species • reducing the resilience of the woodland or trees and making them more vulnerable to change • increasing the amount of dust, light, water, air and soil pollution • increasing disturbance to wildlife, such as noise from additional people and traffic • increasing damage to habitat, for example trampling of plants and erosion of soil by people accessing the woodland or tree root protection areas • increasing damaging activities like fly-tipping and the impact of domestic pets • increasing the risk of damage to people and property by falling branches or trees requiring tree management that could cause habitat deterioration • changing the landscape character of the area" 7.4. Not all of the direct and indirect effects detailed above would necessarily apply to any one development, however, it is necessary that these effects and their adverse impact on ancient woodland are scoped into the environmental assessment of the Lower Thames Crossing scheme to ensure all potential adverse impacts have been accounted for. 7.5. National Highways has provided detail of the impacts of the scheme on ancient woodland, namely outlined within the document 'Environmental Statement, Chapter 8 – Terrestrial Biodiversity'. It is clear that the works proposed as part of this scheme will have a significant impact on a number of areas of ancient woodland. While National Highways has provided exact details of losses to ancient woodland in places, overall it is difficult for the Trust to assess precisely what the impacts might be and the exact number of woods that would be affected by the scheme. Due to the large amount of documentation provided and the limited resource of staff, the Trust may not have been able to pick up on every single relevant matter in this representation. However, the Trust will endeavour to work with the Planning Inspectorate and National Highways to address impacts to all woods affected. 7.6. Within Chapter 8 of the Environmental Statement (ES) Terrestrial Biodiversity [**APP-146**], Table 8.31 provides detail of the habitat losses associated with the project to the south of the River Thames. National Highways has detailed that the loss of ancient woodland within this section of the project would amount to 5.35ha. Within the same

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		document, Table 8.35 details the habitat losses associated with the project to the north of the River Thames. National Highways has detailed that the loss of ancient woodland within this section of the project would amount to 1.57ha of "nationally important" ancient woodland. It is not clear why National Highways has provided a slight change in wording – adding 'nationally important' – when referring to the losses of ancient woodland for different sections of the scheme. This is particularly confusing when National Highways has referred to all ancient woodland as being nationally important earlier in the same document. 7.7. The combined losses detailed in Tables 8.31 and 8.35 would amount to a total loss of 6.92ha of ancient woodland. Unfortunately, statements made further on in the document create confusion regarding the total loss of ancient woodland. Further on in the document, in the 'Summary' section (section 8.9), paragraph 8.9.3 states that there would be a loss of 7.62ha of ancient woodland. Once again, there appears to be an inconsistency here. It is not clear why there are different totals of ancient woodland loss provided within the Environmental Statement. Clarity is required from National Highways on this matter. 7.8. Regardless of the total amount of ancient woodland loss, the Trust is clear that both figures amount to an unacceptable loss of ancient woodland. 7.9. The Trust considers it important to consider how National Highways has sought to understand the effects of both construction and operation of the scheme on woods and their wildlife. Within Chapter 8 of the ES, National Highways has provided detail of the method of assessment for how construction phase effects may impact on habitats, stating in paragraph 8.3.36: "The assessment of construction phase effects includes consideration of potential effects arising from the following: • Construction disturbance, air quality, lighting, vibration, noise or hydrological impacts • Loss of functionally linked land associated with designated sites • Direct loss of wildlife habitat through land-take • Severance, by dividing habitats or wildlife corridors • Direct mortality through construction activities • Disruption of local watercourses • Disturbance to sites, habitats and species resulting from increased visitor pressure and recreational activities" 7.10. National Highways then goes on to detail the method of assessment for how operational phase activities may impact on habitats, stating in paragraph 8.3.39: "The assessment of operational phase effects includes consideration of potential effects arising from the following:

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		• Changes in air quality on designated sites • Disturbance or hydrological effects on designated sites, functionally linked land or qualifying features of designated sites • Direct mortality through traffic collisions • Polluted road runoff affecting the aquatic environment • Impacts from road lighting • Impacts on verge vegetation from polluted spray from the road • Noise disturbance • Disturbance to sites, habitats and species resulting from increased visitor pressure and recreational activities" 7.11. In the aforementioned 'Summary' section of the ES, National Highways has summarised how ancient woods would be impacted in the construction phase and operational phase. While stating that 7.62ha of ancient woodland would be lost as a result of construction, National Highways also details that 22 ancient woodlands would be subject to significant effects during the operational phase of the project, clarifying that such effects would occur as a result of increased nitrogen deposition and the resulting degradation of habitat condition. The Trust's specific comments regarding the impacts of nitrogen pollution are addressed later in Section 12 (Nitrogen Pollution Impacts of the Proposed Scheme) of this representation. 7.12. The Trust fundamentally disagrees with the assertion that significant effects on these ancient woodland sites would only occur as a result of increased nitrogen deposition during the operational phase of the project. The scale and size of the proposed works and proximity to many of ancient woodland sites will undoubtedly elevate noise levels and illumination of woodland sites, increase dust pollution, fragment habitats and the wider natural landscape, and alter the hydrological conditions of habitats. Such impacts cannot be considered individually and the cumulative impact must be fully assessed. These impacts will also have a greater impact on specialist woodland species that are often vulnerable to change and slow to adapt to newly imposed conditions, instead allowing for more generalist species to dominate and resulting in losses of biodiversity. 7.13. The Trust is particularly concerned regarding the impacts on Shorne and Ashenbank Woods SSSI, Shorne / Brewers Wood SSSI, and Claylane Wood. There are of course many other ancient woodland sites across the scheme that would be subject to serious direct impacts and indirect impacts, all with varying levels of severity, though those closer to the proposed scheme will inevitably be worse affected. 7.14. Claylane Wood would be one of the most significantly ancient woods by the entire scheme, with almost half of the ancient woodland area proposed to be lost, 4.24ha as detailed by National Highways. National Highways has

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		stated that habitat degradation of the remaining ancient woodland could be avoided through good practice mitigation, however the severing of this ancient woodland from other nearby semi-natural habitats is so severe that adverse impacts on Claylane Wood are unavoidable and inevitable under the current proposals. 7.15. Shorne and Ashenbank Woods SSSI and Shorne / Brewers Wood SSSI will also be subject to a significant level of habitat loss, with 0.95ha of ancient woodland to be lost to the scheme from these sites, as well as several hectares of other important habitat. The loss of such habitat for the construction of green bridges is laughable and falls way short of appropriate mitigation for loss of SSSI-designated habitat. 7.16. The assertion that good practice mitigation, translocation of protected species and creation of new receptor sites (effectively compensation planting) does not provide the Trust with reassurance that ancient woodland sites affected directly or indirectly – or both – would be appropriately protected from harm and that habitat degradation would not occur. 7.17. Another mitigation measure of concern is the proposed use of 'green' bridges to alleviate the adverse impacts of severe fragmentation resulting from the scheme's construction. National Highways' concept of green bridges for this project is entirely flawed. While some bridges may have a mixed-use with human use also incorporated, i.e. include footpaths, amenity, farmer access, etc., it is far from good practice to incorporate two-lane roads into bridges that should primarily be used as wildlife corridors. Such use conflicts with the purpose of a green bridge to connect up a natural landscape fragmented by a large road scheme. The Trust would question how well-used mixed use bridges would be by the wildlife species that require them most. The Trust would also question whether the bridges are being implemented first and foremostly for the purpose of connecting the landscape and creating new wildlife corridors. This does not seem to be the case. Considering the scale of impact, disconnection of habitats and severance of the natural landscape, the effectiveness of these mixed use bridges for wildlife is highly questionable. 7.18. National Highways must go further to avoid and minimise impacts on ancient woodland. The Trust considers that this road project, which is considered to have national significance, must be seeking to set the benchmark for future major infrastructure projects and development across the nation. It should be setting an example of best practice in developing a new road scheme while also ensuring the protection and enhancement of biodiversity. At present, the project will not achieve this. The significant impacts on ancient woodland must be questioned to determine whether there are further design refinements that can be implemented. The consultation process did not allow for the public or other non-statutory ecological stakeholders to properly engage in such matters.
		Applicant response to paragraphs 7.1 to 7.18 The Applicant agrees that all ancient woodland is considered of national importance, and as stated in Table 8.10 of Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity [**APP-146**], that ancient woodlands are considered

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		irreplaceable habitats. It is agreed that where possible, the loss of veteran trees and ancient woodland should be avoided. The Applicant has worked to avoid impacts but is has not been possible to avoid all ancient woodland loss and meet the Project objectives. To address this adverse effect, the Applicant has proposed extensive ancient woodland compensation planting in discussion with stakeholders including Natural England and Forestry England. This is designed to create new areas of high-quality woodland habitat which link up existing woodlands at a landscape-scale, strengthening ecological networks and building resilience into them against future pressures such as climate change. The combined losses detailed in Tables 8.31 and 8.35 amount to a total loss of 6.92ha of ancient woodland. This contradicts the figure for overall ancient woodland loss of 7.62 in paragraph 8.9.3 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. The figure of 7.62ha is an error. The accurate figure is 6.92ha. This correction is noted in the ES addendum which is being submitted at deadline 2. There is no loss of ancient woodland as a result of the provision of green bridges proposed by the Project. Impacts on ancient woodland during the construction phase have been detailed in Table 8.29, Section 8.6.258 – 8.6.261 and Table 8.33 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. Regarding Claylane Wood, it is acknowledged that there will be a major adverse impact on Claylane Wood which would be significant. Ancient woodland compensation planting is proposed immediately to the north of Claylane Wood ASNW, linking to Thong Lane North green bridge and across into Shorne Woods Country Park, part of Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI) (see Figure 2.4: Environmental Masterplan [**APP-159** to **APP-168**] and the Design Principles [**APP-516**] Clause no. LSP.15, LSP.19, S1.08, S1.14 and S2.01). Further ancient woodland compensation planting to offset the loss of ancient woodland from within Shorne and Ashenbank Woods SSSI is proposed immediately north of Shorne Woods Country Park, linking directly into it, and east of Shorne Woods Country Park linking directly into Great Crabbles Wood SSSI. A number of factors which determine the locations of green bridges along the Project route are detailed in the Project Design Report, Part C, Design Rationale [**APP-509**]. This includes promoting the connectivity of sensitive landscapes, habitats for animals such as bats, badgers and dormice, as well as mitigating landscape severance and providing an improved experience for WCHs.
		WR Extract: **8. Impact of the Proposed Scheme on Veteran Trees** 8.1. The works proposed as part of this scheme will have significant impacts on veteran trees in the vicinity of the scheme. The impact of development on ancient and veteran trees is also captured within the wording provided above and taken from Natural England and Forestry Commission's standing advice. For a scheme such as the

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		Lower Thames Crossing it's likely that impacts will mainly take the form of direct loss, damage to roots, impacts on the tree's rooting environment and/or impacts on species associated with such trees (i.e. bats, birds, invertebrates, bryophytes, (e.g. mosses), epiphytes (e.g. lichens), etc). 8.2. Details of ancient and veteran trees are provided in the Arboricultural Impact Assessment (AIA) contained within Appendix 7.12 of the Environment Statement. Within this assessment, National Highways identified 78 ancient and veteran trees within the study area and five within the order limits. In total, National Highways has identified that six 'potential' veteran trees would be removed to accommodate the scheme: T41, T133, T145, T362, T363 and T570. It is not clear why such trees are considered to be 'potential' veterans rather than plainly considered to be 'true' veteran specimens. Clarification on what is a potential veteran tree is required. 8.3. Further to the direct loss of these six veteran trees, it is apparent that veteran trees and 'potential' veteran trees have been identified by National Highways would face indirect impact and subsequent deterioration as a result of proposed construction activity within their buffer zones. The requirements for buffer zones for ancient and veteran trees are outlined in Natural England and Forestry Commission's standing advice, which states: "For ancient or veteran trees (including those on the woodland boundary), the buffer zone should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5 metres from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter. This will create a minimum root protection area." It further states that "You should not approve development proposals, including gardens, within a buffer zone." 8.4. Buffer zones for trees are also referred to in the BSI Standards Publication 'BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations'. This British Standard document is intended to be used as guidance and recommendations for planning construction activity around trees. This document states that "For single stem trees, the RPA (see 3.7) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter. For trees with more than one stem, one of the two calculation methods below should be used. In all cases, the stem diameter(s) should be measured in accordance with Annex C, and the RPA should be determined from Annex D. The calculated RPA for each tree should be capped to 707 m2 ." 8.5. The BS5837 guidelines do not contain wording related to buffer zones for veteran trees, as such guidance has been developed by Natural England and Forestry Commission since the publication of this guidance in 2012. It does, however, refer to protections required for veteran trees, stating: "Particular care is needed regarding the retention of large, mature, over-mature or veteran trees which become enclosed within the new development. Where such trees are retained, adequate space should be allowed for their long-term physical retention and future maintenance" and "it is recommended that no construction, including the installation of new hard surfacing, occurs within the RPA [of veteran trees]."

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		8.6. We acknowledge that National Highways has sought to ensure that veteran trees are afforded appropriate buffer zones in line with the aforementioned standing advice, recognising that the BS5837 guidelines do not represent the most up to date guidance on veteran tree protections. 8.7. However, as referred to in paragraph 7.2. above, National Highways has identified a number of veteran trees in which construction activity is proposed within their buffer zone, including T630, T609, T29, T555, T557 and T558. While the AIA considers the impacts of construction activity within the buffer zones of ancient and veteran trees, it is not clear whether National Highways has appropriately considered the full scale of impact of its scheme on veteran trees. For example, might re-routing of footpaths, cycle paths and utilities divert visitor pressure towards other veteran trees both within and outside of the order limits of the scheme. 8.8. In total, the scheme is proposed to result in the loss or deterioration of 12 veteran trees. Six veteran trees will be subject direct loss and a further six veteran trees will be subject to deterioration. We consider the loss of these irreplaceable habitats to be entirely unacceptable. 8.9. While National Highways has provided details of identified ancient and veteran trees and the manner in which they will be impacted within the Arboricultural Impact Assessment, it is not clear what efforts have been made to reduce impacts on such trees through alterations to the scheme's design. We request that National Highways is required to produce an ancient and veteran tree strategy, setting out the full impacts of the scheme on ancient and veteran trees, as well as the measures that will be taken to reduce losses and deterioration through further detailed design. Such a strategy should also contain compensations proposals for any truly unavoidable losses and other impacts. 8.10. Finally, while it is important to protect the vitality of ancient and veteran trees by avoiding their loss and providing suitable buffer zones, thought must be given to the species associated with them also. Utilised by an abundance of different wildlife species, many of which are specialist species relying on ancient and veteran trees for their survival, it is vitally important that the ability of such trees to host these species is not adversely affected. For example, greater need for management of such trees where the scheme creates greater proximity to people and vehicles can affect deadwood retention, and increased dust and nitrogen pollution can affect their ability to host important bryophytes and epiphytes. It is important that such considerations have been made and any indications as to where National Highways has made such considerations within the documentation provided would be appreciated.
		Applicant response to paragraphs 8.1 to 8.10 There is no defined definition of ancient or veteran trees in relation to arboricultural assessment in the British Standard (BS 5837:2012) Trees in relation to design, demolition and construction. The Applicant has used the term

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		'potential veteran' for trees that have been identified through the Project's surveys which are believed to be veteran, but not validated as such on the Ancient Tree Inventory. This identification is based on the description provided in Natural England and the Forestry Commission's standing advice for ancient woodland, ancient trees and veteran trees (2022), which states: "*A veteran tree may not be very old, but it has significant decay features, such as branch death and hollowing. These features contribute to its exceptional biodiversity, cultural and heritage value. All ancient trees are veteran trees, but not all veteran trees are ancient. The age at which a tree becomes ancient or veteran will vary by species because each species ages at a different rate*." The Applicant has applied the value ascribed to veteran trees to 'potential veterans' and developed the design and compensatory approach on this basis. The Project has committed contractors to retain all existing vegetation as far as reasonably practicable as set out in Clause no. LSP.01 of the Design Principles [**APP-516**] and to reduce the removal of trees and vegetation as far as reasonably practicable as set out in Register of Environmental Actions and Commitments (REAC) commitment LV001 in ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. In addition, REAC commitment LV013 requires that where excavation for the installation of utilities would require the removal of ancient woodland, trees subject to tree preservation orders or hedgerows subject to the Hedgerows Regulations 1997, trenchless installation methods will be used to avoid removal where reasonably practicable. The protection of retained woodland, trees and hedges is secured by REAC commitment LV028, which requires an Arboricultural Method Statement and Tree Protection Plan to be prepared in accordance with BS 5837:2012, identifying measures for the protection of retained woodland, trees and hedges prior to the commencement of site clearance works. Further details on the Arboricultural Method Statement are set out in Section 5.4 of ES Appendix 7.12: Arboricultural Impact Assessment [**APP-387**]. REAC commitment LV030 stipulates the provision of protective buffer zones and barriers. Where the loss of veteran trees is unavoidable, the hulks of those trees would be translocated and specimen trees would be planted as replacement for lost veteran trees, as secured in ES Appendix 2.2: Code of Construction Practice [**REP1-157**], via commitments LV031 and LV032. The proposed mitigation and compensatory planting is secured via ES Figure 2.4 Environmental Masterplan (Sections 1 to 10) [**APP-159** to **APP-168**]. Specifically with regard to **paragraph 8.8**, the Applicant does not recognise the number of trees quoted by The Woodland Trust as being subject to deterioration "Six veteran trees will be subject direct loss and a further six veteran trees will be subject to deterioration." ES Appendix 7.12: Arboricultural Impact Assessment [**APP-387**],

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		paragraph 5.3.14, confirms there are four trees which may be impacted and sets out how risk of damage to these trees can be avoided. Specifically with regard to **paragraph 8.9**, where it is stated that '*While National Highways has provided details of identified ancient and veteran trees and the manner in which they will be impacted within the Arboricultural Impact Assessment, it is not clear what efforts have been made to reduce impacts on such trees through alterations to the scheme's design',* the number of veteran trees potentially affected by the Project has been incrementally reduced through design iterations such that the number of veteran trees potentially at risk has reduced from ten to six since October 2020 and as set out above, further efforts will be made during detailed design to further reduce currently predicted impacts, which are based on a reasonable worst case assumption for tree loss.
		WR Extract: **9. Impact of the Proposed Scheme on Woodland Trust Land** 9.1. The Trust owns a woodland site, Ashenbank Wood, that falls partially within the order limits of the Lower Thames Crossing scheme. Ashenbank Wood (grid reference: TQ675692) is a 29.95 hectare site located close to the village of Cobham and directly south of the A2 / M2 road and Channel Tunnel rail link. Around 2ha of the site was compulsorily purchased along the northern boundary in 1999 / 2000 to construct the Channel Tunnel rail link, however, in 2006, 2.79ha (6.9 acres) was acquired back from Union Railways and this now forms the north west corner of this wood. 9.2. Ashenbank is set within the Kent Downs Area of Outstanding Natural Beauty (AONB) and is a complex of ancient woodland, wood pasture and parkland sites within the greater Cobham landscape, all once part of the former Cobham Hall Estate. As such, Ashenbank Wood is part of a network of natural sites in the locality: Shorne Woods Country Park (managed by Kent County Council), Cobham Park (owned by Cobham Hall Independent School), Cobham Wood and Mausoleum (managed by The National Trust), Ranscombe Farm Reserve (managed by Plantlife), and Jeskyns Community Woodland (managed by the Forestry Commission). These sites offer public access and are linked by the Darnley Trail, a 10km (6.2mile) multi-user circular route named after the Earls of Darnley who previously owned Cobham Hall Estate. 9.3. The ancient semi natural woodland component at Ashenbank covers around 40% of the site, and contains predominantly oak, ash, hornbeam and sweet chestnut, historically managed by coppicing. There are also a significant number of open grown oak, hornbeam and sweet chestnut veteran trees. 9.4. The former wood pasture/ old parkland component covers the remaining 60% of the site and is comprised of birch, oak and sycamore alongside majestic veteran sweet chestnut trees established in the late 18th century as part

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		of Humphrey Repton's landscape design for Cobham Hall Estate. Approximately 7ha of the historic parkland is still maintained as a series of open glades, managed through cattle grazing and manual cutting programme. 9.5. Ashenbank Wood was designated as part of the Shorne and Ashenbank Site of Special Scientific Interest (SSSI) in 1968 on account of its rich and irreplaceable mixture of ecosystems and habitats, including a significant deadwood assemblage and associated specialist invertebrates, veteran trees and open ground areas. The whole wood is also subject to a Tree Preservation Order (TPO). 9.6. Ashenbank Wood also has an interesting and varied cultural history, with evidence of human activity dating as far back as the prehistoric. Both a Bronze Age round barrow (a Scheduled Ancient Monument) and a shallow medieval (or potentially older) wood bank are located on the site. More recently, Ashenbank was used as an accommodation base camp during the Second World War for RAF personnel stationed at Gravesend airfield; the remains of four bunkers can still be found at Ashenbank, alongside some further examples that are still intact in the surrounding area.
		Applicant's response to paragraphs 9.1 to 9.6 The Applicant acknowledges the ecological, heritage and landscape importance of Ashenbank Wood and the Trust's concerns as to the potential impacts (both physically and on estate management) of the Project. The Applicant has sought to minimise such impacts by ensuring the track is 'permissive' and hence temporary in nature and by undertaking to liaise closely with the Trust and other relevant bodies such as Natural England, upon the design and implementation of any surfacing for this temporary cycle way.
		WR Extract: 9.7. Ashenbank Wood has been under threat of some form of direct and indirect impact from the scheme since the Trust's initial involvement in the scheme in 2016. As National Highways has progressed its scheme the impacts on Ashenbank Wood have evolved, with different consultations over the years proposing a varying degree of impact on this site. The Trust is highly concerned about the impact that the scheme may have on our site in its present form. 9.8. The Trust is namely concerned by the proposed diversion of National Cycle Route 177 (NCR177) through Ashenbank Wood and the subsequent impact on both important ecological features and historical /cultural features within the site. Furthermore, The Trust is concerned by the impact that the proposed diversion of NCR177 through the site will have on the Trust's ability to manage the site appropriately. 9.9. Chapter 8 of the ES does make mention of NCR177 being located through Ashenbank Wood, however, it does not appear that the impact of this diversion on Ashenbank Wood has been fully considered within the document. The diversion of NCR177 is also mentioned within the document '7.4 Project Design Report – Part E: design for Walkers,

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		Cyclists and Horse Riders', stating: "the existing track along the northern edge of Ashenbank Woods will have its surface made suitable for cyclists through to the connection with the southern side of the existing green bridge over HS1. This section through Woodland Trust land is part of the Darnley Trail and includes permissive use for walkers, cyclists and horse riders, the designation of this track will remain unchanged. Once the new roadside alignment of NCR177 is available improvements to the surface will be removed at the request of the landowner." 9.10. The section of Ashenbank Wood that the NCR177 diversion will follow constitutes an unsurfaced path open to visitors. While the area in which the new cycle path will be routed through does not constitute ancient woodland, it does contained a number of over-mature and veteran trees of great importance to Ashenbank Wood's well documented assemblage of invertebrates. Strapped to some of these existing trees are the trunks of 12 trees previously felled as part of the Channel Tunnel Rail Link works in 1999 / 2000, providing vertical deadwood habitats. It is not clear how impacts on these important trees have been considered as part of the NCR177 diversion proposals. 9.11. In addition to the impacts on important trees in this part of the site and the other ecological features of this long-established woodland, it is apparent that National Highways has not considered the interesting archaeological / historical features through this part of Ashenbank Wood. Along the route of the proposed new cycle path are the remains of a Second World War personnel encampment. It is not clear how these features would be protected from the construction of a new cycle path in this location, particularly one proposed to be suitable for cyclists, walkers and horse-riders. 9.12. While the proposed cycle path itself would impact on important features of Ashenbank Wood directly, the Trust also holds concerns relating to the indirect impact that the new path would have as a result of increases in recreational pressure on the site. It is not clear how visitor traffic will be managed through Ashenbank Wood with the NCR177 diversion in place and the potential increase in visitors that it may likely attract. Ashenbank Wood is already subject to considerable footfall and has issues in wetter months on its main tracks. The degradation and typical widening of such tracks where visitors look to avoid muddy sections will affect woodland vegetation and visitor enjoyment. It does not appear that the impact of increased visitor pressure has been appropriately considered by National Highways. 9.13. The Trust considers that the engagement from National Highways on this matter has not been adequate. While National Highways' responsible team for such matters has engaged with the Trust previously, the National Highways staff did not appear to have factored in many of the above issues associated with the proposed diversion of NCR177. Instead, Trust staff have simply been told that specific design of the cycle path will be considered at a later stage in the planning process, with no demonstration of the mitigation hierarchy being applied for either the direct or indirect effects of the scheme.

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		9.14. Finally, also of concern for the Trust is the impact of increased nitrogen emissions on the habitats contained within Ashenbank Wood. Further details of our concerns regarding nitrogen pollution associated with the scheme are contained within Section 12 of this representation.
		Applicant's response to paragraphs 9.7 to 9.14 The Applicant acknowledges the ecological, heritage and landscape importance of Ashenbank Wood and the Trust's concerns as to the potential impacts (both physically and on estate management) of the Project. The Applicant has sought to minimise such impacts by ensuring the track is 'permissive' and hence temporary in nature and by undertaking to liaise closely with the Trust and other relevant bodies such as Natural England, upon the design and implementation of any surfacing for this temporary cycle way. This was discussed in a meeting with the Trust on 14 September 2022 and following that meeting further information was supplied regarding surfacing materials for use in root protection areas which it is proposed would be used for the temporary diversion through Ashenbank Woods for the Trust's consideration. The track's surfacing can be removed once it is no longer needed if the Trust request this. Appendix A of the ES Addendum, submitted at Deadline 1 [**REP1-181**] provides an assessment in response to comments made by Natural England in relation to nationally designated nature conservation sites, with a specific focus on new and diverted Public Rights of Way proposed within the Shorne and Ashenbank Woods SSSI to the south of the A2. The Addendum considers the potential for direct and indirect impacts from these proposals to the SSSI resulting from factors such as increased recreational activity and loss of habitat as a result of the surfacing of the proposed cycle track.
		WR Extract: **10. Impacts on Other Native Woods and Hedgerows** 10.1. While the Trust is primarily concerned with the impact of the scheme on ancient woodlands and ancient and veteran trees, impacts on other native woods, trees and hedgerows are an important consideration also. Government's 'Keepers of Time' policy outlines the importance of native woods and trees being protected alongside ancient woods and ancient and veteran trees. 10.2. The section of the scheme to the south of the River Thames is proposed to result in the loss of 7.67ha of semi-natural broadleaved woodland, 34.87ha of plantation woodland and 4.23ha of scrub habitats. The section of the scheme to the north of the River Thames is proposed to result in the loss of 8.75ha of semi-natural broadleaved and mixed woodland, 64.8ha of plantation woodland and 24.72ha of scrub habitat.

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		Applicant's response to paragraphs 10.1 to 10.2 The Applicant reports the loss and gain figures for all habitats affected by the Project in Table 8.31 and Table 8.35 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. These show a substantial gain in semi-natural habitats as a result of the Project, the design of which looks to develop a landscape-scale approach of creating high quality habitats which link into existing semi-natural habitats to create coherent ecological networks, building resilience against future pressures such as climate change.
		WR Extract: 10.3. For the section of the scheme south of the River Thames, it is proposed that compensation for these losses of non-ancient woodland and scrub would total 138.45ha of new woodland planting and 11.23ha of scrub planting. For the section of the scheme to the north of the River Thames, it is proposed that compensation for the loss of non-ancient woodland and scrub would total 173.75ha of new woodland planting and 46.52ha of scrub planting. The Trust would appreciate clarity on whether Defra's biodiversity metrics have been applied in determining the level of compensation required for these losses. 10.4. Regarding the loss of hedgerow habitat, the scheme is also expected to result in the loss of 4.67km of hedgerow habitat to the south of the River Thames and 38.19km of hedgerow habitat to the north of the River Thames. This is a total loss of 42.86km of hedgerow habitat. 10.5. These losses of non-ancient woodland, scrub, and hedgerows represents a hugely significant loss of important habitat to the local area, much of which is considered to be of county or local importance, or considered priority habitat. It is clear that further steps should be taken through design to reduce anticipated loss wherever possible. This also represents a substantial loss of connectivity across the landscape that would severely impact many areas of ancient woodland, veteran trees and other native wooded habitats. 10.6. While compensation measures have been proposed to support ecological connectivity, the Trust does not consider that the impact of fragmentation from this scheme can be mitigated or compensated for – the severity is simply too great. National Highways must undertake extensive landscape connectivity works to in any way partially compensate for these impacts.
		Applicant's response to paragraphs 10.3 to 10.6 Loss and gain figures for all habitats affected by the Project are reported in Table 8.31 and Table 8.35 of ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. These show a substantial gain in semi-natural habitats as a result of the Project, the design of which looks to develop a landscape-scale approach of creating high quality habitats which link into existing semi-natural habitats to create coherent ecological networks, building resilience against future

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		pressures such as climate change. The landscape design, reported in ES Figure 2.4: Environmental Masterplan Sections 1 to 10 [**APP-159**; **APP-160**; **APP-161**; **APP-162**; **APP-163**; **APP-164**; **APP-165**; **APP-166**; **APP-167**; **APP-168**], provides stepping stones of new habitats for reptiles, amphibians and terrestrial invertebrate assemblages in the form of areas of woodland and open mosaic habitat with ecological ponds, which are linked through hedgerow and grassland planting. The long-term management of these areas is reported in the outline Landscape and Ecology Management Plan [**REP1-173**]. The provision of green bridges within the Project design offer permeability for a range of species, mitigating potential habitat fragmentation impacts. The two green bridges at Thong Lane South and Brewers Road would reduce the existing fragmentation between Shorne Wood and Ashenbank Wood which is present as a result of the existing A2/M2 highway and the HS1 railway line, and so would present a betterment of the current position. The focus of all ecological mitigation has been to provide the most appropriate and highest quality habitats possible within the design of the Project. Although Defra's biodiversity metric has been employed as part of the Project assessment in ES Appendix 8.21: Biodiversity Metric Calculations [**APP-417**], the Project has avoided aiming to maximise biodiversity units by accepting lower quality habitats within the design, instead opting for ambitious higher quality habitats which don't generate such high scores within the metric (e.g. plantation woodland compared to lowland mixed deciduous woodland).
		WR Extract: **11. Compensation** 11.1. Where areas of irreplaceable habitat are proposed to be lost, appropriate compensation for such losses impact must be provided. Using the mitigation hierarchy of avoid, mitigate and compensate, any loss of irreplaceable ancient woodland that is considered truly unavoidable cannot be mitigated, so must become the subject of compensatory action. Therefore, the Trust is eager to ensure that every possible step is taken to minimise the loss of irreplaceable ancient woodland and then rather than resort to compensation for its loss. 11.2. Table 8.31 of the 'Environmental Statement, Chapter 8 – Terrestrial Biodiversity' states that 5.35ha of ancient woodland would be lost to the south of the River Thames. As compensation for this loss, 48.75ha of 'Ancient Woodland Compensation Planting' is proposed. This amounts to a compensation ratio of approximately 9.1:1 new planting to ancient woodland lost. 11.3. Table 8.35 within the same document details the habitat losses associated with the scheme to the north of the River Thames. This table states that 1.57ha of ancient woodland would be lost to this section of the scheme. As compensation for this loss, 32ha of 'Ancient woodland mitigation planting' is proposed. This amounts to a compensation ratio of approximately 20.4:1 new planting to ancient woodland lost.

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		Applicant's response to paragraphs 11.1 to 11.3 The Applicant welcomes the acknowledgement by the Woodland Trust of the proposed compensation measures relating to the impact of the Project on Ancient Woodland.
		WR Extract: 11.4. It is not clear why two different terms ('Ancient Woodland Compensation Planting' and 'Ancient woodland mitigation planting') have been used to describe the new seminatural habitat provided in compensation. The terms mitigation and compensation have different meanings in planning terms and therefore it is important to separate out such measures. Natural England and Forestry Commission's standing advice is clear that mitigation refers to mitigating against damage and reducing impact, while compensation is a means of particularly compensating for loss or damage of irreplaceable habitats (and to be used as a last resort). 11.5. In total, compensation planting for the loss of 6.92ha of ancient woodland from this scheme appears to be 80.75ha. This places the compensation ratio of new planting to ancient woodland loss for the entire scheme at approximately 11.7:1. It is not apparent why ancient woodland lost to the north of the River Thames will be compensated for at a higher ratio than ancient woodland lost to the south. Clarification from National Highways on the justification for the proposed compensation ratios for ancient woodland loss would be appreciated. 11.6. Natural England's 2016 'Review of the High Speed 2 No Net Loss in Biodiversity Metric' report[6] (as commissioned by the House of Commons HS2 Phase 1 Bill Committee) recommends that "where ancient woodland is to be replaced by new woods, an area based ratio of 30:1 is appropriate." While we appreciate that such a statement was made specifically in relation to the HS2 project, the project for which such compensation would occur should be considered irrelevant. Natural England has clearly taken a position previously on the need for a compensation ratio of 30:1 for ancient woodland loss on another large infrastructure scheme. It therefore stands to reason that Natural England should be seeking a similar ratio for this project. 11.7. In light of the above, the Trust seeks a commitment that National Highways will increase the overall extent of compensation measures proposed beyond those currently proposed and to a ratio of 30:1. We consider that any additional compensation proposals should also include enhancement of existing ancient semi-natural woodland. As with ancient and veteran trees, we would request that National Highways produces an Ancient Woodland Strategy to fully detail the impacts of the scheme on ancient woods and the mitigation and compensation measures that would be implemented for these habitats. 11.8. Regarding the process of ancient woodland compensation planting it is important to note that it is not possible to fully recreate ancient woodland habitat. It is not clear from the documentation we have examined whether National

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		Highways is intending to use the often proposed method of translocating ancient woodland soils from a lost ancient woodland site to a new planting site. Clarification on this would be greatly appreciated. 11.9. Furthermore, the ancient woodland compensation proposals do not appear to include any measures to enhance existing ancient semi-natural woodland. We would appreciate clarification on whether this would be the case. To clarify the Trust's position, enhancement of ancient semi natural woodland should be considered a valuable component of compensation strategies. Enhancement has the added benefit of being delivered through agreements with landowners and therefore being a less coercive form of compensation than measures which require compulsory purchase. 11.10. All planting should be carried out at a landscape scale in accordance with the 'Lawton Principles', an approach which champions the role that new woodland must play in supporting biodiversity, reversing fragmentation and building better habitat networks to create landscapes that are more resilient to change. 11.11. Furthermore, the compensation proposals should be suitably secured through an appropriate legally binding agreement or covenant to ensure they deliver benefits over the long-term and cannot easily be lost to other new development.
		Applicant's response to paragraphs 11.4 to 11.11 The Applicant agrees with the Woodland Trust that the loss of ancient woodland cannot be mitigated and therefore the proposals should be considered as compensation for the losses predicted. In terms of the extent of compensation planting proposed, the Applicant did not focus on meeting loss:gain ratio targets and has discussed the approach to this design with stakeholders including Natural England who advocated a design which focused on a landscape-scale approach to joining existing woodland habitats and building resilience into ecological networks; the Lawton Principles referenced above. This has resulted in different areas of compensation planting north and south of the River Thames as the objective of the design has never been to meet specific ratios. The detail of this compensation planting strategy, including justification for the landscape rather than site-based approach, is given in ES Appendix 5.6: Project Air Quality Action Plan [**APP-350**], Section 7.3 Compensation Strategy. The Applicant does intend to salvage ancient woodland soils wherever practicable to inoculate areas of ancient woodland compensation planting. This is secured in ES Appendix 2.2: Code of Construction Practice [**REP1-157**], REAC commitment TB028. The long-term management of all areas of landscape and ecology design is secured in the outline Landscape and Ecology Management Plan [**REP1-173**].

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		WR Extract: **12. Nitrogen Pollution Impacts of the Proposed Scheme** 12.1. The Lower Thames Crossing scheme is proposed to have significant impacts on the natural environment through increased nitrogen pollution, as well as increased climate contributions through its associated greenhouse gas emissions. 12.2. Nitrogen pollution is a serious threat to the natural environment and considered one of the greatest threats to ancient woodland in the UK. While the evidence regarding impacts of nitrogen pollution on veteran trees is somewhat limited, it is well understood how nitrogen pollution can impact on species associated with such trees, e.g. lichens. 12.3. Ancient woodlands across the UK are being adversely impacted by increasing concentrations of airborne ammonia and deposition of nitrogen. New developments leading to increased nitrogen deposition must not allow for further degradation of ancient woodland sites. Road schemes, such as the Lower Thames Crossing, often result in increased emissions of nitrogen oxides (Nox). 12.4. Increased nitrogen levels in ancient woodland can lead to a greater abundance of nitrogen-loving species which out-compete and impact on many characteristic ancient woodland plants and mosses, thereby degrading the ecological integrity of ancient woodland sites. This has a knock-on impact on all animal species associated with the nitrogen sensitive components, e.g. larval food plants of woodland butterflies, moths and other invertebrates. Further to this, many woodland fungi and lichens are sensitive to nitrogen deposition. There are particular concerns about impacts of nitrogen on ectomycorrhizal species (those associated with tree roots) and the subsequent impact on tree health. With lichens, many species and communities evolved and developed at low levels of atmospheric nitrogen and are sensitive to change. Where lichens on trees are affected, so too are the invertebrates that rely on them as a microhabitat; there are also knock-on impacts on wider ecosystems services that lichens contribute to, such as carbon cycling and water retention.
		Applicant's response to paragraphs 12.1 to 12.4 The Applicant recgonises the potential impact of nitrogen on the environment. The assessment of the effects of nitrogen deposition on habitats within designated sites is included within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**, **APP-404**, **APP-405**, **APP-406**] and the Habitats Regulations Assessment Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**].

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		WR Extract: 12.5. The process by which the impacts of pollutants on ecosystems is determined is based on the use of critical levels and critical loads. While critical level relates to gaseous concentration in air (typically ammonia – NH3), critical load is the most relevant to the Lower Thames Crossing project as it relates to the quantity of nitrogen deposited from the air to the ground and represents an estimate of the level below which significant harmful effects do not occur. The process contribution (PC) is the nitrogen deposited to the ground as a result of a development. The critical load for woodland habitats in the UK has been defined within a range of 5-20kg N/ha/yr (kilograms of nitrogen per hectare per year), dependent on woodland vegetation types. Where such information is unavailable then the default value used is 10kg N/ha/yr. However, this level is thought to not be robust enough even, with key components of woodland ecosystems often deteriorating where the critical load is higher than 5-6kg N/ha/yr. 12.6. The PC of a new development should be expressed as a percentage of the critical load (or critical level) for a site. For example, if the emissions of a development are modelled to result in 0.1kg N/ha/yr then that would equate to a PC of 1% to a critical load of 10kg N/ha/yr. Where the PC is modelled to be below 1% then it is unlikely that emissions at this level will have a significant contribution to detrimental air pollution impacts and resulting habitat degradation. 12.7. The Trust considers that all new development should be expected to account for impacts to ancient woodland and use a 1% PC threshold. The Environment Agency currently sets a 100% PC threshold for ancient woodland habitats. Unfortunately, this PC threshold accepts the fact that an individual development will result in the exceedance of critical levels and loads, and that ancient woodland will deteriorate as a consequence. This is out of alignment with current policy as the NPPF requires that there is no deterioration of irreplaceable habitats. 12.8. As such, the Trust considers that wherever the PC threshold of nitrogen deposition at ancient woodland sites exceeds 1% of the critical load for ancient woodland, then the impacts on those sites will be significant as they would be subject to adverse impact and habitat deterioration. 12.9. National Highways has determined that there would be 22 ancient woodland sites that would be significantly affected by nitrogen pollution in the operational phase of the project. The Trust would question what threshold National Highways applied to determine significance of impact and whether the application of a 1% PC threshold would show that additional areas of ancient woodland are facing significant adverse impact. The Trust is also concerned that National Highways is struggling to mitigate nitrogen emissions from the scheme and is instead opting to simply utilise compensation planting areas to deal with the severe nitrogen pollution associated with the scheme. This, of course, would be unacceptable and does not seem to align with the mitigation hierarchy.

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		Applicant's response to paragraphs 12.5-12.9 The assessment of the effects of nitrogen deposition on habitats within designated sites is included within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**, **APP-404**, **APP-405**, **APP-406**] and the Habitats Regulations Assessment Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. The assessments are summarised in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. The assessment methodologies and thresholds used are consistent with Design Manual for Roads and Bridges standards and Natural England guidance NEA001 *Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations*. The use of thresholds within the assessments was developed in consultation with Natural England and is an agreed matter with them. The approach to determining mitigation and compensation is presented in the Project Air Quality Action Plan [**APP-350**]. Sections 4 to 6 clearly set out the compliance with the mitigation hierarchy and presents a detailed assessment of the mitigation measures considered in terms of their viability and feasibility. There are only a limited number of mitigation measures where quantifiable reductions can be reliably demonstrated and the reasons why these measures were not considered to be appropriate is discussed in detail. It should be noted that Natural England support the proposed mitigation and compensation package and this is an agreed matter with them.
		WR Extract: **13. Climate Impacts of the Proposed Scheme** 13.1. Climate change is the biggest long-term threat faced by our natural environment and ecosystems, and thus our own life support systems. The Trust supports an increase in UK woodland cover from its current 13% of land area to 19% by 2050 to tackle this country's biodiversity and climate crises. The value of woodland in sequestering carbon emissions has been recognised by Government, yet further erosion of ancient and mature woodland by the Lower Thames Crossing project would further undermine the ability to meet its net zero obligations. Indeed, in England, ancient and long-established woodlands have been shown to hold 36% more carbon per hectare than all other woodland types.

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		Applicant's response to paragraph 13.1 As noted in response to section 7 above, the Project has sought to reduce impacts on ancient woodlands and has commitments to seek further reductions during detailed design and construction. As part of the Project's landscape scale mitigation and compensation strategy almost 400ha of woodland planting is proposed, with commitments secured within the outline Landscape and Ecology Management Plan [**REP1-173**] to ensure the management and maintenance of these woodland sites in perpetuity, working in partnership with National Highways operatives and where appropriate third parties (e.g. Forestry Commission and Thames Chase at Hole Farm). The Project is setting out an industry-leading position in terms of driving out carbon in the preliminary design and setting a framework to continue to reduce its carbon impact through the commitments made in the Carbon and Energy Management Plan [**APP-552**], which is one of three documents addressing carbon reduction in the DCO Application: Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**] states that '*the Project represents a step change in approach for a road scheme of this scale, in terms of the scope and nature of the measures which the Applicant is committing to deliver to reduce emissions during the construction and operation of the new road. Together with the policies which the Government has set out in its Decarbonising Transport Plan (2021), these measures ensure that the Project is aligned with a trajectory to net zero and that the Project's emissions would not therefore be significant, in accordance with relevant guidance.*' • Carbon and Energy Management Plan [**APP-552**]. • ES Chapter 15: Climate [**APP-153**] Additionally, a review and the Project's response to legislation, policies and plans relevant to climate is presented in ES Appendix 15.1: Climate Legislation and Policy [**APP-480**]. A second iteration of the Carbon and Energy Management Plan [**APP-552**] would be used to demonstrate the implementation of the carbon commitments secured through the DCO during the construction phase and would set out the ways in which appointed Contractors would demonstrate that carbon emissions are kept within the defined limits. The Project has a commitment to implement the PAS2080 'Carbon Management in Infrastructure' standard, and each Contractor's plan would be refreshed annually to demonstrate it remains consistent with emerging best practice and aligned with their emissions pathway.

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		WR Extract: 13.2. A number of important developments in UK climate change policy have occurred since the Lower Thames Crossing project was first proposed. Meeting the recently adopted target of net zero carbon by 2050 represents a major policy challenge of which transport is a central component. The UK Climate Change Committee (CCC) reports that transport emissions increased by 6% between 2013 and 2019 and were 4% higher than in 1990. Though the CCC note that transport emissions fell dramatically in 2020 due to lockdown restrictions, travel rebounded again in 2021 as restrictions lifted. Road transport accounts for 91% of the UK's domestic surface transport emissions. Although vehicles have become more fuel efficient, this has been offset by increasing travel demand.
		Applicant's response to paragraph 13.2 The Applicant acknowledges the concern raised, however, the Project results in the creation of new capacity on the road network which will lead to changes in the way people travel. Some people will choose to make different journeys because shorter or less congested routes become available, and some people who would not previously have travelled will choose to make new journeys because the faster or shorter journey becomes more affordable. As a result, there will be changes in the lengths of journeys made, and in the total number of journeys made. The net increase in kilometres driven is highest in the PM peak hour, with an overall increase of 1.1% in 2030 and 1.23% in 2045. Further information is provided in section A.3 New and longer trips in Annex A of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**],
		WR Extract: 13.3. To overcome such trends, the CCC Net Zero report highlighted the need for new policy frameworks to be developed. The Department for Transport [DfT] acted on this recommendation, publishing a Green Paper 'Decarbonising transport - setting the challenge' in March 2020. This includes recognition that "We will use our cars less and be able to rely on a convenient, cost-effective and coherent public transport network." A successful strategy to reduce transport's carbon emissions must include measures to manage road travel demand, not accommodate its growth. We maintain our challenge that the Lower Thames Crossing scheme is inconsistent with this approach.
		Applicant's response to paragraph 13.3 Through its Transport Decarbonisation Plan (TDP), the DfT has set out a range of non-planning policies which will help to decarbonise the surface transport sector in line to achieve the national carbon reduction targets by 2050. However, the TDP also states that '*Continued high investment in our roads is therefore, and will remain, as necessary as ever to ensure the functioning of the nation and to reduce the congestion which is a major source of*

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		carbon'. The Project is considered vital to reduce congestion on the busiest part of the strategic road network. Refer to Need for the Project [**APP-494**]. Alternatives to the Lower Thames Crossing were considered in a study in 2009 commissioned by DfT. National Highways reconsidered the road and rail public transport solutions in 2017 in response to the public consultation and concluded that while some of the alternative modes could be complementary to a new road crossing of the Lower Thames, none had the capability of solving the identified strategic traffic problem and meeting the Scheme Objectives. Strategic options were revisited as part of the 2022 options reappraisal, which confirmed that the decisions made remain valid. For further details refer to Section 3.6 and Section 3.9 of ES Chapter 3: Assessment of Reasonable Alternatives [**APP-141**]. In recognising its role to support the DfT, the Applicant has set out its own pathway to supporting the DfT's decarbonisation of the surface transport sector through the publication of their 2021 plan 'Net Zero highways: Our 2030, 2040 and 2050 plan' (National Highways, 2021). Specifically for the Lower Thames Crossing, the Project has set out an industry-leading position in terms of driving out carbon in the preliminary design and setting a framework to continue to reduce its carbon impact through the commitments made in the Carbon and Energy Management Plan, which is one of three documents addressing carbon reduction in the DCO Application: • ES Chapter 15: Climate [**APP-153**] • Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**] • Carbon and Energy Management Plan [**APP-552**].
		WR Extract: 13.4. Any decision regarding the Lower Thames Crossing must be consistent with the UK's international commitments regarding carbon emissions. The court decision concerning plans for a third runway at Heathrow highlighted the need for consistency in the Government's legal objectives regarding emissions cuts and major infrastructure development proposals which are predicated on increasing transport movements. While the court decision was recently overturned, the Government must lead the way in cutting emissions if the UK is to remain credible at climate negotiations.
		Applicant's Response to13.4 The Applicant does not wish to respond to this comment.
		WR Extract:

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		13.5. Within the document '6.1 Environmental Statement Chapter 15 – Climate', National Highways details the anticipated carbon emissions associated with the project, stating in paragraph 15.9.9 of the 'Summary' section: "The total net GHG [greenhouse gas] emissions over the appraisal period of the Project (construction stage plus 60-year operational phase from opening) are calculated to be approximately 6.596 million tCO2e [tonnes of carbon dioxide equivalent]." 13.6. This proposed increase in greenhouse gas emissions is entirely unacceptable and is out of step with Government ambitions and commitments towards net zero targets. While National Highways may claim that reductions can be made to greenhouse gas emissions, the Trust lacks confidence that such serious reductions could ever be made based on the information available.
		Applicant's response to paragraphs 13.5 and 13.6 To assist the decision maker in understanding the potential effects of the Project's GHG emissions, the Applicant has presented three scenarios to give a range of credible outcomes in terms of net emissions arising from the Project from its construction and operation. Each scenario has been put into context with the relevant UK carbon budget. Table 15.17 of ES Chapter 15: Climate [**APP-153**] includes a conservative scenario using EFT v11 which does not reflect existing net zero policy and electric vehicle uptake rates. The table also includes two further scenarios which present an upper and lower bound of the TDP implementation and its likely impact on vehicle emissions. The majority of emissions resulting from the Project are operational from vehicle usage. The Government's Transport Decarbonisation Plan (TDP) includes a range of non-planning policies which will help to reduce the carbon emissions of the transport network over time (including polices to decarbonise vehicles and radically reduce vehicle emissions) and will help to ensure that national carbon reduction commitments are met. The TDP recognises that the government's policy of investment in the strategic road network will continue. In addition to an assessment against the national budgets, the Applicant has also provided contextualisation in terms of alignment with the net zero trajectory as per the Institute of Environmental Management & Assessment (IEMA) guidance 'Assessing greenhouse gas emissions and evaluating their significance' (IEMA, 2022). This is described in full in paragraph 15.6.5 of ES Chapter 15: Climate [**APP-153**]. The assessment concludes that the GHG emissions from the Project would not have a material impact on the ability of the Government to meet its carbon reduction targets, and are therefore not significant in EIA terms. In relation to GHG emissions from the construction, the Applicant has produced an innovative Carbon and Energy Management Plan [**APP-552**]) which outlines a series of secured commitments, 22 in total (see Appendix E of the plan), that put in place processes and mechanisms that would ensure the greatest likelihood of low carbon design, low carbon construction processes and low carbon material selection. The delivery partners are incentivised to create a range of options to deliver low carbon solutions across the entire Project. The Project has put in place

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		ground-breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phases. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position, to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This represents a genuine opportunity to accelerate the UK construction industry's transition to a low-emissions future which would also provide benefits to the local supply chain in the Lower Thames Crossing area.
		WR Extract: 13.7. The Lower Thames Crossing project is a relic of the Government's outdated 'predict and provide' model of transport planning based on predicting future demand to provide capacity. The latest consultations on road transport, such as the Government's 'Draft National Policy Statement for National Networks' signalled a move away from this model to a system where new development is a last resort. This project does not align with any of the Government's latest commitments on future road transport or achieving net zero.
		Applicant's response to paragraph 13.7 The Applicant refers the reader to the response for 13.3. The Applicant also notes that the Government publishes plans and policies as mechanisms to deliver the national response to achieving the net zero trajectory set out through the carbon budgets. These include the 2021 publication "*Net Zero Strategy: Build Back Greener*". The Government's net zero policies to achieve the carbon budgets are adaptable to implement new developments and priorities, or to address the (annual) advice of the CCC, an independent statutory body established under the CCA that reports periodically to Parliament on government's progress to meeting net zero. This constitutes a robust 'plan-do-check-act' mechanism for the UK to keep on track for net zero. This applies equally to construction and operational phase emissions including road user emissions. The Government's TDP includes a range of non-planning policies which will help to reduce carbon emissions over the transport network over time (including polices to decarbonise vehicles and radically reduce vehicle emissions) and that national carbon reduction commitments are met. The TDP recognises that the government's policy of investment in the strategic road network will continue. For the Lower Thames Crossing Project, as a Nationally Significant Infrastructure Project, the relevant policy is the 2014 NPSNN.

REP1-315 British Horse Society

Rep ID	WR Submitter	WR/Applicant's Response
REP1-315	British Horse Society	**WR:** WR Link: **REP1-315**
		Applicant's Response: The Written Representation (WR) from the British Horse Society (BHS) reiterates comments made by them at Open Floor Hearing 2 (OFH2). Submissions from the BHS at OFH2 were responded to by the Applicant at Section 3 of the Post-event submissions, including written submission of oral comments, for OFH2 [**REP1-185**] but are expanded upon here for completeness. Throughout the design process, the strategy for developing Walking, Cycling and Horse Riding (WCH) proposals has been developed, taking onboard comments received through the statutory consultation process as well as ongoing engagement with stakeholders, including the BHS. The Applicant has undertaken extensive engagement with the BHS throughout the DCO process. Table 9.15 of the Consultation Report [**APP-064**] describes how additional engagement with persons with an interest in land, including Forestry England and the Woodland Trust, after Local Refinement Consultation (September 2022) resulted in the Project no longer including the redesignation of existing permissive paths through Jeskyns Community Woodland and Ashenbank Wood to a bridleway. Table 9.15 confirms that the Applicant also engaged with the BHS about these changes. Details of existing and proposed Public Rights of Way (PRoW) and general provision for Walkers, Cyclists and Horse Riders (WCH) can be found in: • Rights of Way and Access Plans - Volume B (sheets 1 to 20) [**REP1-025**] and Volume C (sheets 21 to 49) [**REP1-026**] • ES Figure 13.4: Population and Human Health Assessment – Proposed WCH Links [**APP-320**] • Transport Assessment Appendix A: Public Rights of Way [**APP-530**] • Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] In addition to the above information and subject to agreement by the Examining Authority, the Applicant intends to publish a new set of plans at Deadline 2 which will draw together all the various sources of WCH information into a single place.

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		Byway NS195/NS311 The BHS note in their WR that the route shown as "new byway" on - Appendix A - Public Rights of Way [**APP-530**] Plate 1.1 "*is not new as it already exists as NS195*". This is correct. The Applicant has proposed that existing byways NS195 and NS311 are resurfaced with motorised vehicles temporarily restricted, as they will form part of the proposed temporary NCR 177 route. Byway NS195 currently serves as a connection to the existing horse trail within Jeskyns Community Woodland and the Darnley Trail used by WCH through Ashenbank Wood. **Church Lane (Road)** The BHS note in their WR that the route shown as "*a new bridleway*" on - Appendix A - Public Rights of Way [**APP-530**] Plate 1.1 is in fact "*Church Lane - a public carriageway so already carries public rights including vehicular".* This is correct. The Applicant has proposed a new bridleway which is off-road and parallel to Church Road from the Pegasus crossing on Henhurst Road, connecting to footpath NS175A. **Bridleway south of the A2** Originally the Applicant had sought to create a new bridleway through Ashenbank Wood and Jeskyns Community Woodland, but this proposal was amended prior to the submission of the DCO application because it was not supported by the Woodland Trust or Forestry England (as managers of the respective sites) and horse riders already benefit from the use of permissive paths through Ashenbank Wood and Jeskyns Community Woodland that provide the same level of connectivity as the previously proposed bridleway would have. Moreover, the Project would also enhance the WCH network connecting to these which include two proposed green bridges across the A2. It would provide a network of routes that give horse riders an uninterrupted link between woodlands such as Thames Chase Forest, Hole Farm community woodland and the Mardyke in Essex, and Ranscombe Farm Reserve, Ashenbank Wood and Shorne Woods Country Park in Kent. The Applicant had previously proposed that the temporary route for National Cycle Route (NCR) 177 through Ashenbank Wood would become a bridleway following the construction period. However, due to concerns raised by the Woodland Trust about impacts of the increased use of existing Darney Trail on the woodland, the proposals were revised. The temporary surface would now be removed when the permanent alignment of NCR177 is available at the request of the landowner. The Darney Trail, which is an existing permissive path through Ashenbank Wood used by equestrians, would be retained. This provides east-west connectivity across the wood for horse-riders. Moreover, as BHS' WR notes, there may be an opportunity for BHS to work directly with Kent County Council to promote a Section 26 order to provide a bridleway because the land is held in freehold by the Woodland Trust. At Jeskyns a new bridleway was previously proposed through the site. However, due to concerns about site management and interactions between different user groups Forestry England objected to proposal. As this is Crown

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		land the Applicant has no power to acquire compulsorily the land necessary to create a new bridleway. However, the Applicant understands there may be scope for the BHS to explore some form of licensed permissive path directly with Forestry England, to understand if this would be acceptable. The existing horse-rider trail through Jeskyns Community Woodland will remain available to horse riders to the best of our knowledge and will not be impacted by the Project. There will be a new permissive bridleway link between this existing trail and Henhurst Road to increase east-west connectivity for horse-riders. Temporary permissive paths for walkers and cyclists (separate to the existing horse-rider trail) are proposed through Jeskyns to both augment the existing network and cater for cyclists who will make use of these permissive routes whilst the National Cycle Route 177 (NCR177) is temporarily diverted from its current route adjacent to the A2. **Detailed design of WCH routes** With regard to the exact dimensions and type of surfacing for Walking, Cycling and Horse Riding routes, these have not been determined yet in light of the design stage of the Project at this time. These details would be specified during the detailed design phase taking account of site-specific conditions, relevant design standards and the requirements of the Design Principles [**APP-516**], with the most appropriate option being used for each route. The Applicant would highlight, in particular, design principle PEO.04 which sets out that WCH routes would be designed in accordance with the appropriate standards.

REP1-317 Buglife – The Invertebrate Conservation Trust

Rep ID	WR Submitter	WR/Applicant's Response
REP1-317	Buglife - The Invertebrate Conservation Trust	**WR:** WR Link: **REP1-317**
		Applicant's Response: **Impact on the Thames Estuary Important Invertebrate Area and its nationally important population of rare and scarce invertebrates** The summary of data presented by Buglife in its written representation aligns with the baseline reported by the Applicant in Environment Statement (ES) Appendix 8.3: Terrestrial Invertebrates [**APP-392**]**,** and the limitations of the surveys undertaken. This data was used to assess the likely significant effects of the Project on terrestrial invertebrates reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. It recognises the diversity of habitats within the Project's zone of influence which have been surveyed for invertebrates, and the importance of the assemblages recorded. A summary of the importance of these assemblages is provided in Tables 8.11 and 8.22 of [**APP-146**] with Section 8.6 paragraphs 8.6.69 – 8.6.79 and 8.6.289 – 8.6.304 identifying potential impact pathways such as habitat loss and fragmentation as part of the assessment of adverse effects. The assessment concludes that adverse effects would result from the Project and that, north of the River Thames, those effects would be significant given their extent and the nationally important assemblages affected. The methodology adopted for field survey of invertebrates is set out in ES Appendix 8.3: Terrestrial Invertebrates [**APP-393**] and the Applicant considers that it provides a robust approach for the purposes of the assessments presented in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. A robust compensation package of habitat creation to address these adverse effects is reported in **APP-146**, and secured through ES Figure 2.4: Environmental Masterplan, Sections [**APP-159** to **APP-168**]; Design Principles [**APP-516**], and the outline Landscape and Ecology Management Plan [**REP1-173**]. Key to this compensation is the provision of large areas of open mosaic habitat creation, designed to provide high quality habitat to support a range of invertebrate assemblages along the North Thames Estuary and Marshes area. A principal objective of this design is to join up the areas of land which would be retained by the Project and that support nationally important invertebrate assemblages so there is a coherent ecological network linking currently fragmented sites either side of the Project. This approach has been discussed at length with Natural England in relation to their Site of Special Scientific Interest (SSSI) scoping study and considerations of SSSI notification in this area and it is the Applicant's view that the design supports this potential SSSI notification.

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		Loss or impacts on Local Wildlife Sites including Low Street Pit, Blackshots Nature Area, Mucking Heath, Rainbow Shaw and Canal and Grazing Marsh Higham The Applicant recognises the adverse effect on non-statutory wildlife sites, including ancient woodlands, reporting on these in ES Chapter 8: Terrestrial Biodiversity [**APP-146**], Section 8.6 paragraphs 8.6.48 – 8.6.50 and Tables 8.29 and 8.30, and paragraphs 8.6.252 – 8.6.261 and Tables 8.33 Table 8.34. These sections report both the potential adverse effects predicted together with measures proposed to mitigate those adverse effects. These measures include areas of habitat creation to offset those which would be lost, and these are designed to provide high quality habitats which link into existing semi-natural habitats, building resilience into the wider ecological network. This approach is secured through ES Figure 2.4: Environmental Masterplan, Sections [**APP-159** to **APP-168**]; and Design Principles [**APP-516**]. **Impacts on the Shorne and Ashenbank Woods Site of Special Scientific Interest and loss of ancient woodland, veteran trees and woodland habitats.** The Applicant recognises the adverse effect on statutory wildlife sites, as well as ancient woodlands, reporting on these in ES Chapter 8: Terrestrial Biodiversity [**APP-146**], Section 8.6. These sections report both the potential adverse effects predicted together with measures proposed to mitigate and compensate those adverse effects. These measures focus on extensive areas of habitat creation to offset those which would be lost. Key to this habitat creation is to link into existing semi-natural habitats, building resilience into the wider ecological network at a landscape scale. This approach was developed in discussion with stakeholders including Natural England and Forestry England. This approach is secured in the ES Figure 2.4: Environmental Masterplan, Sections [**APP-159** to **APP-168**]; and Design Principles [**APP-516**]. The impacts to these sites have been assessed against each site as a separate ecological receptor. In addition, terrestrial invertebrate assemblages have been assessed as a separate ecological receptor independent to any site designation, as detailed in the first response to this written representation above. **Cumulative impact of developments in Thames Estuary and fragmentation of habitats in Essex** The cumulative effects of the Project in combination with other existing and/or approved developments and referred to as 'inter-project' effects are assessed within the ES Chapter 16: Cumulative Effects Assessment [**APP-154**]. This chapter considers cumulative effects on terrestrial biodiversity as a whole and includes specific assessments on terrestrial invertebrates where relevant (see Section 16.5). There is currently no legislative mandate for Nationally Significant Infrastructure Projects to achieve a biodiversity net gain uplift of 10% or higher. The Project's biodiversity metric forecasts, reported in ES Appendix 8.21: Biodiversity Metric Calculations [**APP-417**], are based on the preliminary design and a number of limitations and assumptions (as

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		detailed in Section 5 of that appendix) that have had to be made to allow a quantitative forecast of biodiversity unit change. It is considered that this assessment provides a realistic worst-case scenario of the likely performance of the Project in terms of net biodiversity, given the necessarily precautionary nature of the assumptions made. As stated within this technical appendix, the Project recognises that it would result in the loss of irreplaceable habitats such as ancient woodland, and that this would prevent any overall claim of Biodiversity Net Gain for the Project (paragraph 1.1.10). **Indirect impacts of increased nitrogen deposition on low nutrient habitats** The assessment of the effects of nitrogen deposition on habitats within designated sites is included within ES Appendix 8.14: Designated Sites Air Quality Assessment [**APP-403**, **APP-404**, **APP-405**, **APP-406**] and Habitats Regulations Assessment Screening Report and Statement to Inform an Appropriate Assessment [**APP-487**]. The assessments are summarised in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. The assessment of effects of nitrogen deposition on designated sites included only two sites with low nutrient open mosaic habitats with potential to support valuable assemblages of terrestrial invertebrates, namely Goshems Farm Local Wildlife Site (paragraph 6.51.1 in [**APP-403**]) and Linford Pit Local Wildlife Site (paragraph 6.67.1 in [**APP-403**]). The effect of nitrogen deposition on both of these sites was assessed as neutral (not significant). Areas of potential importance for invertebrates are identified in Table 8.11 and Table 8.22 in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. However, none of the areas supporting open mosaic habitats are within 200m of the Affected Road Network and therefore scoped out of the assessment of effects of nitrogen deposition as no effects are likely at that distance. The assessment of nitrogen deposition on SSSIs which include invertebrates in their citations identified potential adverse effects with changes in vegetation composition which could lead to indirect effects on invertebrate assemblages. These sites were: Halling to Trottiscliffe Escarpment SSSI; Langdon Ridge SSSI and Wouldham to Detling Escarpment SSSI. However, these sites are predominantly woodland with grassland areas, not the early successional and open mosaic habitats which are of particular importance for rare and scarce invertebrates [**APP-403**, **APP-404**, **APP-405**, **APP-406**]. The effects of nitrogen deposition on all other locally designated sites which support grassland and open mosaic habitats with possible invertebrate interest were assessed as not significant [**APP-403**, **APP-404**, **APP-405**, **APP-406**]. These sites include Arena Essex, West Thurrock LWS, Arisdale Avenue LWS, Tilbury Marshes LWS; Bowers Gifford Grassland LWS, Cuxton Pit LWS and Mucking Heath LWS.

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		It is acknowledged that open mosaic and early successional habitats can be important for invertebrates and that these habitats require low nutrient substrates and ongoing management to maintain the low and open sward of vegetation. The compensation strategy, as described in detailed in the Project Air Quality Action Plan [**APP-350**], provides for the creation of large areas of grassland, as well as woodland habitat. These grassland areas can be designed to include areas of low nutrient substrate to offset any adverse effects on existing habitats. These areas would link into retained habitats creating resilience in the wider network and facilitating species movement across the landscape. The creation and management of open mosaic habitats as part of project mitigation and compensation is set out in the outline Landscape and Ecology Management Plan (oLEMP) [**REP1-173**]. The oLEMP sets out proposals for appropriate long-term adaptive management, which will be informed by long-term monitoring and will ensure that these areas would be managed to ensure retention of their proposed structure, composition and function, and would therefore continue to support diverse invertebrate assemblages.

REP1-323 Climate Emergency Policy and Planning (CEPP)

Rep ID	WR Submitter	WR/Applicant's Response
REP1-323	Climate Emergency Policy and Planning (CEPP)	**WR:** WR link: **REP1-323** Appendix A link: **Marsden Report** Appendix B link: **Sustainability Report** Appendix C link: **Hydrogen Leakage**
		WR Extract: Q1 The most important question is "to what extent does the project contribute, or undermine, securing the Net Zero Strategy ("NZS") and the net zero target?"'.
		Applicant's Response In line with the requirement set out in the National Policy Statement for National Networks (NPSNN), the Applicant has considered the impact of the Project against the UK carbon budgets to enable the decision maker to determine whether the Project's GHG emissions would have a material impact on the Government's ability to meet its carbon reduction targets (which are set out in the national carbon budgets under the Climate Change Act 2008). The Climate Change Act 2008 (Amended 2019) states *"It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline".* The Project has been designated as a pathfinder project to test low carbon innovation and approaches and will set new standards of best practice within National Highways and will facilitate the construction industry's transition to net zero. This is underlined by the Applicant in its 2021 net zero plan "*Net Zero Highways: Our 2030 / 2040 / 2050 plan*"[6]. The publication of this plan and commitment to use the Project to test low-carbon innovation and approaches demonstrates the extent to which the Applicant is determined to find new ways to lower emissions during construction that will have beneficial impacts across the industry. The Applicant has exceeded the requirements of legislation and policy with respect to carbon emissions, in the following ways. As part of its DCO submission, the Applicant has produced an innovative Carbon and Energy Management Plan [**APP-552**] which outlines a series of secured commitments, 22 in total (see Appendix E), that put in place processes and mechanisms that would ensure the greatest likelihood of low carbon design, low carbon

[6] National Highways (2021). Net Zero Highways: Our 2030 / 2040 / 2050 plan.

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		construction processes and low carbon material selection. The delivery partners are incentivised to create a range of options to deliver low carbon solutions across the entire Project. The Institute of Environmental Management & Assessment (IEMA) guidance '*Assessing greenhouse gas emissions and evaluating their significance*' [7] states: *"The crux of significance is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".* Through the Carbon and Energy Management Plan [**APP-552**], Sections 15.5 and 15.6 of Environmental Statement (ES) Chapter 15: Climate [**APP-153**], and Planning Statement Appendix I: Carbon Strategy and Policy Alignment, the Applicant has defined a worst-case construction emissions scenario that comprises current best practice (at the time of the DCO Application, October 2022). The Project has put in place ground-breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would also implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. In taking a coherent approach to carbon reduction through procurement, commercial incentives and management arrangements, the Applicant has gone beyond the significance criteria set out in the IEMA guidance, leading to further emissions reductions from a starting point that already represents best practice in the construction industry. This approach would have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets. Therefore, in line with the IEMA guidance: 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' the Project is compatible with the budgeted science-based 1.5°C trajectory (in terms of rate of emissions reduction) and both complies with and exceeds up-to-date policy and 'good practice' reduction measures. The Project emissions would not therefore have a significant impact within the meaning of the IEMA guidance. In line with the requirements of the NPSNN, Section 15.6 of ES Chapter 15: Climate [**APP-153**], provides a comparison of the Project's GHG emissions against the UK carbon budgets, to provide contextualisation against the

[7] IEMA (2022). Assessing greenhouse gas emissions and evaluating their significance

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		net zero trajectory. It is concluded that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets. To summarise, the Applicant's approach to assessment constitutes a robust risk assessment, going beyond the requirements of the NPSNN in assessing significance, and represents a genuine opportunity to accelerate the UK construction industry's transition to a low-emissions future. Q2 Is there any emissions space available for a project such as Lower Thames Crossing which has construction emissions of 1,762,967 tCO2e and opening year (2030) traffic model "DS" operation emissions of 8,996,305 tCO2e [Table 15.16]?' **Applicant's Response** The 'DS' operation emissions of 8,996,305 tCO2e relate to the modelled area. The additional emissions as a result of the implementation of the Project would be 95,415 tCO2e in 2030 (refer to Table 15.16 of ES Chapter 15: Climate [**APP-153**]. In line with the requirements of the NPSNN, Section 15.6 of ES Chapter 15: Climate [**APP-153**] provides a comparison of the Project's GHG emissions against the UK carbon budgets to provide contextualisation against the net zero trajectory. The contribution of the Project's GHG emissions to the fourth, fifth and sixth carbon budget is 0.058%, 0.053% and 0.048% respectively in the worst-case scenario (refer to Table 15.17 of ES Chapter 15: Climate). It is concluded that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets. Moreover, the Project has put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets. Therefore, in line with the IEMA guidance: 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' the Project is compatible with the budgeted science-based 1.5°C trajectory (in terms of rate of emissions reduction) and both complies with and exceeds up-to-date policy and 'good practice' reduction measures. The Project emissions would not therefore have a significant impact within the meaning of the IEMA guidance.

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		It is noted that a detailed quantitative response to this question cannot be reasonably required to be compiled in an environmental statement as this would require details on all existing and future developments and likely implications of (current and future) Government policies on their future emissions. Relevant to this position is that an environmental statement is required to include such information as is reasonably required to assess the environmental effects of the development and which the applicant can reasonably be required to compile having regard to current knowledge (see R. (Khan) v London Borough of Sutton [2014] EWHC 3663 (Admin), Preston New Road Action Group v Secretary of State for Communities and Local Government [2018] Env. L.R. 18) and R (Finch) v Surrey County Council [2020] EWHC 3566 (Admin). 141 I have already provided my conclusions on (2) - there is not sufficient emissions space in the 4CB and 5CB (Industry) residual emissions allocations for the project to be constructed, and there is not sufficient emissions space in the 5CB and 6CB (Surface Transport) residual emissions allocations for the project to be operated. **Applicant's Response** The ES concludes that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets. Refer to the response to Q1 and Q2 above for further details. 142 If the project does not have the available emissions space, then by definition it undermines securing the CBDP [Carbon Budget Delivery Plan] and the net zero target. I therefore assess it to be "Major Adverse" on the IEMA significance thresholds. Major adverse is defined as: *"Major adverse: the project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.* **Applicant's Response** The ES concludes that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets. Moreover, the Project has put in place ground-breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would

Rep ID	WR Submitter	WR/Applicant's Response
		have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets. Therefore, in line with the IEMA guidance: 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' the Project is compatible with the budgeted science-based 1.5°C trajectory (in terms of rate of emissions reduction) and both complies with and exceeds up-to-date policy and 'good practice' reduction measures. The Project emissions would not therefore have a significant impact within the meaning of the IEMA guidance. Refer to the response to Q1 and Q2 above and the ES Chapter 15: Climate for further details. 143 I have provided evidence that the project risks the further necessary emissions reductions required by existing national policy for projects of this type (ie: meeting the residual emissions, and associated policies, for both the Industry and Surface Transport sectors) as there is no emissions space for it. It has the major adverse effect of locking in emissions rather than meeting the residual emissions allocation. It therefore does not make a meaningful contribution to the UK's trajectory towards net zero. **Applicant's Response** The Project has put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets. 144 It is worth noting that the question of whether the contextualisation shows the scheme to be "Minor Adverse", or more than "Minor Adverse" (ie "Moderate Adverse" or "Major Adverse") is important on the IEMA thresholds. This is because this is the threshold point for significance in the IEMA guidance. A "Minor Adverse" scheme is not significant whereas a more than "Minor Adverse" scheme has significant adverse effects. **Applicant's Response** Section 15.6 of ES Chapter 15: Climate [**APP-153**], provides reasoned conclusions in regard to the alignment to the IEMA criteria. The Applicant considers no additional response to this statement is required. 145 These are points which I respectfully submit that the ExA may wish to drill into as the SoS must considers them in his/her decision making.

Rep ID	WR Submitter	WR/Applicant's Response
		(A) It is clear from the ES from the Applicant's own data that LTC scheme creates additional, and very significant, carbon emissions: over 1.1 million tonnes of CO2e from construction in the 4CB. A further 740,000 tonnes are emitted from the scheme in the 5CB and 6CB when the operation emissions are calculated solely for the scheme itself (ie "solus" not cumulative). When the entire traffic system which is modelled for the scheme is considered (the DS case), the scheme produces over 68 million tonnes in the 5CB and 6CB. **Applicant's Response** In line with the requirements of the NPSNN, Section 15.6 of ES Chapter 15: Climate [**APP-153**] provides a comparison of the Project's GHG emissions against the UK carbon budgets to provide contextualisation against the net zero trajectory. The contribution of the Project's GHG emissions to the fourth, fifth and sixth carbon budget is 0.058%, 0.053% and 0.048% respectively in the worst-case scenario (refer to Table 15.17 of ES Chapter 15: Climate). It is concluded that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets. The net change in carbon emissions from the operational phase of the Project in the 60-year appraisal period is 4,833,762 tCO2e (refer to Table 15.16 in ES Chapter 15: Climate [**APP-153**]). The Project will not result in additional 68 million tonnes CO2e in the 5th and 6th carbon budget periods. There is no relevance in using the DS scenario as this scenario includes the emissions without the Project in the modelled area as well. To assist the decision maker in understanding the potential effects of the Project, the Applicant has presented three scenarios to give a range of credible outcomes in terms of net emissions arising from the Project. Each scenario has been put into context with the relevant UK carbon budget. Table 15.17 of ES Chapter 15: Climate [**APP-153**] includes a conservative scenario using EFT v11 which does not reflect existing net zero policy and electric vehicle uptake rates. The table also includes two further scenarios which present an upper and lower bound of the TDP implementation and its likely impact on vehicle emissions. In addition to an assessment against the national budgets, the Applicant has also provided a contextualisation in terms of alignment with the net zero trajectory as per the Institute of Environmental Management & Assessment (IEMA) guidance 'Assessing greenhouse gas emissions and evaluating their significance' (IEMA, 2022). This is described in full in paragraph 15.6.5 of ES Chapter 15: Climate [**APP-153**]. The assessment concludes that the GHG emissions from the Project would not have a material impact on the ability of the Government to meet its carbon reduction targets, and are therefore not significant in EIA terms. (B) It is also clear from the evidence above on CBDP that there is no evidence that delivery of this critical climate policy under the Climate Change Act 2008 is secured. In fact, the evidence strongly supports the opposite case that the CBDP is unlikely to be delivered successfully, and, in any case, the risks to delivery have not been adequately assessed. Currently, there are shortfalls for delivering the 2030 NDC and the 6th carbon budget, and much of the underlying policy is not supported by credible plans (CCC 2023 Progress Report).

Rep ID	WR Submitter	WR/Applicant's Response
		Applicant's Response The Applicant awaits the UK Government's response to the recommendations set out in the Climate Change Committee's progress report to Parliament, published on 28 June 2023 and will continue to support the Department for Transport (DfT) in decarbonising the transport sector. Through the Climate Change Act 2008 (CCA), the UK commits to a robust mechanism to address delivery challenges to achieve net zero. The Government's net zero policies are adaptable to implement new developments and priorities, or to address (annual) advice of the Climate Change Committee (CCC), an independent statutory body established under the CCA that reports periodically to Parliament on Government's progress. This constitutes a robust 'plan-do-check-act' mechanism for the UK to keep on track for net zero and is clearly set out as such in the Government's Net Zero Strategy: Building Back Greener of 2021 which states *"This strategy is a long-term plan for a transition that will take place over the next three decades. Many of the policies in the strategy will be phased in over the next decade or longer. Given our success in decarbonisation to date we are confident in our approach, but this strategy does not intend to predict the exact shape of the British economy in 2050 and neither should it."* (C) At the time of his/her decision, the SoS should consider the latest evidence on CBDP, and the status of the on-going legal challenge to it, any related reports from the Transport Select committee (eg on the draft NNNPS). He/she should also consider the 2023 CCC Progress Report, any updates to the Green Alliance Net Zero Policy Tracker, Professor Marsden's research and my submissions here. **Applicant's Response** The Applicant awaits the UK Government's response to the recommendations set out in the Climate Change Committee's progress report to Parliament, published on 28 June 2023 and will continue to support the DfT in decarbonising the transport sector. The Applicant has set out its own pathway to supporting the DfT's decarbonisation of the surface transport sector through the publication of the 2021 plan '*Net Zero highways: Our 2030, 2040 and 2050 plan'.* (D) I have provided contextualisation of the scheme against the residual emissions in the CBDP for the surface transport (operation) and industry (construction) sectors, and have used the contextualisations to respond to the question: "Is there any emissions space available for a project such as Lower Thames Crossing which has construction emissions of 1,762,967 tCO2e and opening year (2030) traffic model "DS" operation emissions of 8,996,305 tCO2e [Table 15.16]?" **Applicant's Response** Refer to the response to Q2 above.

Rep ID	WR Submitter	WR/Applicant's Response
		The Net Zero Strategy provided clarifies the following on page 77 with regard to the indicative sector pathways: 'These pathways are therefore not predictions or targets…'. The subsequent CBDP does not redefine the UK Government's position on the indicative pathways as stated in the Net Zero Strategy (i.e. they are not predictions or pathways. Given the clear position of the UK Government on the status of the indicative sector pathways (not predictions or targets) it is considered that the Secretary of State would not think that an assessment against these pathways is important and relevant. ES Chapter 15: Climate [**APP-153**] quantifies the net end-user carbon emissions that the implementation of the Project would generate, and it remains within the Government's remit to absorb these within the current transport indicative pathway or in other sectors. An assessment against the national budget is therefore considered most appropriate. (E) I conclude that there is not sufficient emissions space in the 4CB and 5CB (Industry) residual emissions allocations for the project to be constructed, and there is not sufficient emissions space in the 5CB and 6CB (Surface Transport) residual emissions allocations for the project to be operated. **Applicant's Response** The ES concludes that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets, refer to the responses to Q1 and Q2 above and for further substantiation, to the ES. (F) By definition, given this, the project undermines securing the CBDP and the net zero target. I therefore assess it to be "Major Adverse" on the IEMA significance thresholds. **Applicant's Response** The ES concludes that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets. The Project has put in place ground breaking mechanisms, secured through the 22 carbon commitments presented in Table E.1 of the Carbon and Energy Management Plan [**APP-552**] and Table 15.13 of ES Chapter 15: Climate [**APP-153**], to further reduce the construction phase emissions during the procurement, detailed design and construction phase. These mechanisms would facilitate the Applicant's ambitions to deliver an industry-leading carbon position to go substantially beyond the requirements of today's policy and would implement and promote new best practice for large-scale civil engineering projects to achieve carbon neutral construction. This approach would have a long-term positive effect on the construction industry's future alignment with a budgeted science-based 1.5°C trajectory set out through the UK carbon budgets. Therefore, in line with the IEMA guidance: 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' the Project is compatible with the budgeted science-based 1.5°C trajectory (in terms of rate of emissions reduction)

Rep ID	WR Submitter	WR/Applicant's Response
		and both complies with and exceeds up-to-date policy and 'good practice' reduction measures. The Project emissions would not therefore have a significant impact within the meaning of the IEMA guidance. Refer to the response to Q1 and Q2 above and for further substantiation, to the ES Chapter 15: Climate. (G)This equates to failing the existing NPSNN 5.18 test as 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. **Applicant's Response** The ES concludes that the Project's GHG emission would not have a material impact on the Government's ability to meet its carbon reduction targets as set through the national carbon budgets, refer to the response to Q2 above and for further substantiation, to the ES. (H) As the application has an applicable national policy statement (i.e. the existing NNNPS), section 104 of the Planning Act 2008 ("the 2008 Act") applies to the decision making. This states that the Secretary of State must decide an application in accordance with the relevant NPSs except to the extent s/he is satisfied that to do so would: • lead to the UK being in breach of its international obligations (s104(4)); • be in breach of any statutory duty (s104(5)); • be unlawful (s104(6)); • result in adverse impacts from the development outweighing the benefits (s104(7)); or • be contrary to regulations about how its decisions are to be taken (s104(8)). (I) As far as s104(4) is concerned, the scheme generates over 1.1 million tonnes CO2e from construction up to 2030. This consumes 1/300th of the whole allocation of UK Industry whilst at the same time as the country needs to find 11.5 MtCO2e and 115 MtCO2e of as yet unsecured emissions reductions in the 4CB and 5CB respectively. This creates a strong risk that the UK will fail to deliver its 2030 NDC. **Applicant's Response** Refer to the response to Q2 above. (J) An 8 MtCO2e shortfall on the NDC has already been noted in the CBDP – the LTC scheme makes the possible shortfall worse by over another 1.76 MtCO2e. **Applicant's Response** The construction period as assessed in the DCO application was envisaged to be in the period 2024-2030. ES Chapter 15: Climate estimates the Project's GHG emissions of 1,76MtCO2e for the entire construction period. These

Rep ID	WR Submitter	WR/Applicant's Response
		should therefore not be allocated to the year 2030. It should be noted the effect of the two-year rephasing as announced in the Ministerial Statement will be included in the ES addendum to be submitted in deadline 2. (J continued) Critically, as the CBDP contains no fit for purpose risk assessment, the Applicant can provide no evidence that the project can be built whilst securing the 2030 NDC. Therefore, the scheme risks the UK being in breach of its international obligations, and the SoS cannot have any legal certainty that approving the scheme will not lead to the UK being in breach of its international obligations. **Applicant's Response** Refer to the response to Q2 above. (K) As far as s104(5) is concerned, the statutory duty to deliver the 5th and 6th carbon budgets depend upon the successful delivery of the CBDP. Construction emissions affect the 5CB as above. The surface transport sector has yet to secure 122.6 MtCO2e of emission reductions in the 5CB and 228.6 MtCO2e in the 6CB. The LTC scheme brings with it a traffic system, as modelled, with a very high carbon footprint (16.4% of the residual surface transport emissions for the whole UK in the 6CB) at the same time as the country needs to find 228.6 MtCO2e of as yet unsecured emissions reductions. **Applicant's Response** Refer to the response to Q2 above. (L) Therefore, by adding new construction and operation emissions to the vital 5th and 6th carbon budget periods, the scheme risks the UK being in breach of the Climate Change Act 2008, and the SoS being in breach of his/her statutory duty. The SoS cannot have any legal certainty that approving the scheme will not lead to him/her being in breach of a statutory duty. **Applicant's Response** Refer to the responses to Q1 and Q2 above. (M) As far as s104(6) is concerned, the legal requirement to deliver the 5th and 6th carbon budgets under the Climate Change Act 2008 depend upon the successful delivery of the CBDP. As above, the scheme risks the UK being in breach of the Climate Change Act 2008, and the SoS being in breach of the law. The SoS cannot have any legal certainty that approving the scheme will not lead to him/her being in breach of the law. **Applicant's Response** Refer to the responses to Q1 and Q2 above.

REP1-327 Cycle Advocacy Network (CAN)

Rep ID	WR Submitter	WR/Applicant's Response
REP1-327	Cycle Advocacy Network (CAN)	**WR:** WR Link: **REP1-327**
		Applicant's Response: **Provision of facilities for people who cycle to use the new tunnels to cross the Thames** The Applicant's strategy for maintaining, upgrading and improving the WCH networks near the Project has been to examine the existing network and how this could be improved, considering which areas around the Project it would be most advantageous to link or provide access to, and how working with the existing network could best facilitate this. The Applicant has considered various options during the development of the Project to provide improved river crossings for walkers and cyclists, which has been built on evidence and the Department for Transport 2009 Dartford River Crossing Study[8], including in the Post-Consultation Scheme Assessment Report[9]. The options investigated include using the tunnel, upgrading the existing ferry, relocating the ferry, building a separate bridge or cable car, and providing a shuttle service through the tunnel. These options were not taken forward for reasons including lack of technical feasibility, operational issues, lack of commercial viability, cost, environmental impacts and impacts on safety. A walking and cycling shuttle is not considered viable due to low latent demand, uncompetitive journey times, and the distance of the pick-up points from the tunnel portals. Page 48 of the Project Design Report Part G – Design Evolution [**APP-514**] provides more information on the consideration of the provision of a cycle route and cycle shuttle service in the tunnel following feedback from National Highways Design Review Panel in 2019. Item number 2.1.28 in the Draft Agreed Statement of Common Ground between National Highways and Essex County Council submitted at Deadline 1 [**REP1-099**] reiterates the Applicant's position on cross-river provision for cycling via the tunnel. It also states that as part of the Project, the Applicant has set up a Sustainable Transport Working Group involving local authority stakeholders to investigate sustainable travel and cross-river connectivity

[8] Department for Transport (2009). Dartford River Crossing Study. Accessed July 2023. https://webarchive.nationalarchives.gov.uk/ukgwa/20100513123749/http://www.dft.gov.uk/about/strategy/capacityrequirements/dartfordrivercrossing/
[9] Highways England (2017). Post-Consultation Scheme Assessment Report. Accessed July 2023. https://highwaysengland.citizenspace.com/ltc/lower-thames-crossing-consultation/

Rep ID	WR Submitter	WR/Applicant's Response
		enhancements that could be delivered in future to complement the Project. The Group has proposed several local priorities and opportunities for feasibility studies for future funding applications. The report includes nine stakeholder priority measures including ferry service improvements, feasibility studies for cycling and e-bike initiatives, and a walking, cycling and public realm action plan for Tilbury that may be of relevance. Designated funds are very much considered the appropriate mechanism for providing these measures, which fall outside the remit of the DCO, but may be facilitated by it. **Provision of WCH connections across HS1 on overbridges adjacent to the Marling Cross Hares Bridge, Henhurst Road and Brewers Road** Due to technical complexities and constraints associated with the upgrade of the existing bridges over the HS1 railway line it was not considered viable to modify these bridges as they would require extensive structural work including widening and/or replacement to provide adequate shared WCH provision to the latest design standards and guidance. Alternative routes are available further east. **The dedication of many new and improved cycle routes as bridleways or permissive paths, whilst providing negligible information on proposed widths, surface materials, drainage, lighting and ongoing maintenance of such routes within the DCO application.** The authorised development, including WCH routes, must be designed in detail and carried out in accordance with the Design Principles [**APP-516**] and the preliminary scheme design. This is secured by means of Schedule 2 Requirement 3 (detailed design) of the draft DCO [**REP1-042**]. The Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] includes indicative information about surfacing for new and upgraded routes, although the final details of these would be decided by the appointed Contractors within the parameters of the assessment. The design specifications (including widths and surfacing) for WCH routes will be addressed at detailed design given they will be dependent upon the environment within which they are located and their intended users. Specific WCH design commitments for WCH routes can be found within Table 4.1 Project-wide design principles: Connecting people, within the Design Principles [**APP-516**], specifically PEO.01, PEO.03, PEO.04 and PEO.06. The final surfacing and access controls must adhere to the national guidance and legislation as outlined in these design principles which includes Design Manual for Roads and Bridges standard CD 195[10] Designing for cycle traffic and

[10] Highways England (2021). CD 195 Designing for cycle traffic. Accessed July 2023. https://www.standardsforhighways.co.uk/tses/attachments/4b59ebc3-065b-467f-8b43-09d2802f91c8?inline=true

Rep ID	WR Submitter	WR/Applicant's Response
		Local Transport Note 1/20[11] (LTN1/20) Cycle infrastructure design. All new routes would be designed to the latest standards, for example, where the Applicant is proposing new cycle routes that follow the alignment of an existing road, the cycle track would be separated from motor traffic. Where walkers, cyclists and horse riders share routes, the Applicant would ensure they are able to do so safely by providing appropriate width and segregation where practicable. The proposals were formulated after engagement with stakeholder groups including local authorities, Sustrans, Cycling UK, the Ramblers Association and the British Horse Society. **Permissive path/bridleway vs cycleway** The proposed new and improved routes for WCHs as part of the overall WCH Strategy have been developed through consultation with key stakeholders and landowners. They have been designed specifically for the area in which they are located and the onward connection for WCH to the existing PRoW network. Furthermore, within those areas where landforms are proposed, the use of permissive routes allows us to retain some flexibility in the design going forwards as these may be subject to change, within the constraints of the limits of deviation for the Project and other relevant controls, during the detailed design stage. For details on the rationale for the proposed WCH, please refer to The Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**].

[11] Department for Transport (2020). Cycle Infrastructure Design. Accessed July 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf

REP1-342 Essex Ramblers

Rep ID	WR Submitter	WR/Applicant's Response
REP1-342	Essex Area Ramblers	**WR:** WR Link: **REP1-342**
		Applicant's Response: **Proposed infrastructure for walkers, cyclists and horse riders (WCH)** The Applicant notes Essex Ramblers are '*generally content that the replacement PRoWs are adequate in principle*'. However, the Applicant notes that Essex Ramblers made comments on a number of matters of detail which are responded to below: Details of existing and proposed Public Rights of Way (PRoW) and general provision for Walkers, Cyclists and Horse Riders (WCH) can be found in: • Rights of Way and Access Plans Volume B (sheets 1 to 20) [**REP1-025**]; and Volume C (sheets 21 to 49) [**REP1-026**] • Environmental Statement (ES) Figure 13.4: Population and Human Health Assessment – Proposed WCH Links [**APP-320**] • Transport Assessment Appendix A: Public Rights of Way [**APP-530**] • Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] In addition to the above information and subject to agreement by the Examining Authority, the Applicant intends to publish a new set of plans at Deadline 2 which will draw together all the various sources of WCH information into a single place. Throughout the design process, the strategy for providing improvements for WCH has been developed, taking onboard comments received through the statutory and formal consultation process. In parallel with the development of the Statutory Consultation design, a Walking, Cycling and Horse Riding Assessment (WCHAR) was carried out. This explored the existing PRoW network, national and local policies, local demographics, existing/future trip attractors, commuter routes, and consultation feedback to determine where there might be strategic opportunities for WCH. As part of this process key stakeholders, including The Ramblers, were consulted.

Rep ID	WR Submitter	WR/Applicant's Response
		The Project's total provision of additional and improved WCH routes equates to approximately 64km, which encourages active travel. These are summarised in Table 13.54 of ES Chapter 13: Population and Human Health [**APP-151**]. The Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] and Chapter 5 of the Planning Statement [**APP-495**] describe the proposals and explain the WCH strategy that helped formulate them. The Project makes considerable additional provision for new accessible transport measures in terms of WCH as identified at paragraph 7.5.40 of the Health and Equalities Impact Assessment [**APP-539**]. **Comments on PRoWs** The Applicant's WCH proposals were formulated in consultation with stakeholder groups including local authorities, Sustrans, Cycling UK, the Ramblers Association and the British Horse Society. All new routes would be designed to the latest standards. Where WCH share routes, the Applicant would ensure they are able to do so safely by providing appropriate width and segregation where practicable. The Design Principles [**APP-516**] explain which standards would be applied to new and upgraded WCH routes, in particular clauses PEO.01-PEO.11, PRO.02, STR.05-STR.08, S1.17, S2.02, S2.12, S3.18, S10.09, S10.13, S11.16, S12.08, S12.16-S12.18, S14.04, S14.10, S14.11 and S14.20-S14.23. The proposed design is legally secured, should the DCO Application be granted, by way of Schedule 2 Requirement 3 'Detail design' of the draft Development Consent Order [**REP1-042**] which states '*the authorised development must be designed in detail and carried out in accordance with the design principles.. and the preliminary scheme design shown on the engineering drawings and sections, and the general arrangement drawings*…'. The exact type of surface for WCH routes has not been determined. The type of surface and widths would be specified during the detailed design phase in accordance with design standards and the Design Principles [**APP-516**], with the most appropriate option being used for each route. The Project Design Report [**APP-506** to **APP-515**] includes indicative information about surfacing for new and upgraded routes, although the final details of these would be decided by the appointed Contractors within the parameters of the assessment. Temporary restrictions due to construction are shown in the Streets Subject to Temporary Restrictions of Use Plans [**APP-027** and **APP-029**], which shows roads that would be subject to temporary alteration, diversion and restriction of use. The Project has sought to ensure that all WCH routes that will be severed by the route (and historic severances where reasonably practicable) will be reconnected. As part of the wider WCH strategy, routes have been upgraded to improve connectivity and access for more users. Where appropriate bridges have been designed to accommodate active travel, and tie into the wider footpath and bridleway network. The WCH strategy has also explored improving and enhancing WCH network connectivity between the surrounding communities.

Rep ID	WR Submitter	WR/Applicant's Response
		Where required, temporary diversion routes would be put in place until the construction works are complete. The Register of Environmental Actions and Commitments within ES Appendix 2.2: Code of Construction Practice [**REP1-157**] includes a commitment (PH001) regarding the reduction of durations that footpaths, cycleways and bridleways need to be closed. For the Public Rights of Way in Tables 13.66 and 13.69 of ES Chapter 13: Population and Human Health [**APP-151**] the Applicant would engage with members of the public and relevant stakeholders (for example, local walking groups), to ensure they are fully appraised of any closures and diversions as far in advance as reasonably practicable, install clear signposts to outline any temporary diversions in consultation with the local highways authorities, PRoW officers and other relevant stakeholders and utilise social media to update members of the public of any closures and diversions that are in place. Information about the impact of the Project on PRoWs can be found in the Transport Assessment [**APP-529**]. Impacts on PRoW during the construction and operational phases of the Project are also assessed in ES Chapter 13: Population and Human Health [**APP-151**] Tables 13.22, 13.24, 13.25, 13.27, 13.64 and 13.66. **Transport Assessment** The Lower Thames Area Model has been developed in line with the Department for Transport's (DfT) Transport Analysis Guidance (TAG), which advises on best practice in transport models that provide evidence for use in the appraisal of transport schemes and policies. The development of the Lower Thames Area Model forecasts is detailed fully in the Combined Modelling and Appraisal Report [**APP-518**]. The guidance on developing a traffic baseline requires that the data used should be appropriate. The Applicant has reviewed the information and confirmed that the traffic flows in 2016 are appropriate to use as a baseline for the transport model for the Project, on the basis that there have been no fundamental changes to the road network, or other local or national conditions that would have led to the data becoming unrepresentative. It should be recognised that this is simply a baseline for the purpose of ensuring that the model is representative; all of the assessments are based on a future forecast of the opening year, created following the guidance on creating such a forecast. Notwithstanding this, the most recent year of complete data before the Covid-19 pandemic would be 2019. It would not be standard practice to update a base model within three years unless there was consideration that something significant had changed that would change the level/ pattern of demand, which is not the case for the period between 2016 and 2019. Following 2019, the Covid-19 pandemic led to changes in traffic flows in the years affected by the pandemic. The Government has recently provided guidance on how to consider changes in traffic flows arising from changes

Rep ID	WR Submitter	WR/Applicant's Response
		following the pandemic (DfT, 2023)[12]. Traffic levels have returned after the Covid pandemic, and the Applicant will continue to monitor traffic levels against those forecast for 2030. For more information about how the Applicant has carried out traffic modelling following industry best practice, see the Combined Modelling and Appraisal Report [**APP-518**], including [**APP-519**, **APP-520**, **APP-521**, **APP-522** and **APP-523**] Appendices A, B and C. A summary of the methodology is included in the Traffic Forecasts Non-Technical Summary [**APP-528**]. **Government's Transport Decarbonisation Plan** The Project's compliance and alignment with legislation, policy and plans relevant to climate, including 'Decarbonising Transport: A Better, Greener Britain' (DfT, July 2021), are presented in ES Appendix 15.1: Climate Legislation and Policy [**APP-480**] and Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**]. Opportunities taken to reduce carbon emissions are discussed in the Carbon and Energy Management Plan [**APP-552**] and ES Chapter 15: Climate [**APP-153**]. It is also addressed in Appendix I: Carbon Strategy and Policy Alignment of the Planning Statement [**APP-504**], which sets out the low-carbon innovation and approaches that would be used in the Project to explore how the Applicant can reach its target of achieving carbon-neutral construction by 2040 and help the UK reach net zero by 2050. Appendix I explains how the Project represents a step-change in approach for a road project of this scale, in terms of the scope and nature of the measures that the Applicant is committing to deliver to reduce emissions during the Project's construction and operation. Together with the policies which the Government has set out in its Decarbonising Transport Plan (DfT, 2021a), these measures ensure that the Project is aligned with a trajectory to net zero and that the Project's emissions would not therefore be significant, in accordance with relevant guidance. The air quality assessment for the Project is presented within ES Chapter 5: Air Quality [**APP-143**]. The Project is not predicted to affect the UK's reported ability to comply with the Air Quality Directive.

[12] Department for Transport (DfT) (2023). Impact of the Coronavirus (COVID-19) pandemic on flow weighting for congestion data.

REP1-351 Higham Parish Council

Rep ID	WR Submitter	WR/Applicant's Response
REP1-351	Higham Parish Council	**WR:** WR link: **REP1-351**
		Applicant's Response: The Applicant has reviewed the Written Representation (WR) [**REP1-351**] and Summary of WR [**REP1-350**] submitted by Higham Parish Council (HPC). Following this review, the Applicant considers that the WR Summary sufficiently covers HPC's key concerns. The response below uses subtitles taken from HPC's Summary of WR to provide easy signposting. The Applicant believes that all the issues raised by HPC are contained within the updated Statement of Common Ground (SoCG) submitted at this Deadline 2 [**Document Reference 5.4.5.3 (2)**]. **Proposed Route** The Applicant notes under this section HPC has commented on its opposition to the proposed route and that Option A14 should be reconsidered. The Applicant's response to this point is addressed in item 2.1.45 of the HPC SoCG . **Impact on Higham Village (Construction traffic using A2/A289/A226, Unsuitability of A226 at Higham, Traffic blockages in Higham, Proposal, Alternative Proposal)** The Applicant notes under this section HPC has commented on construction traffic using the A2/A289/A226 and concerns about Higham village becoming blocked if there is congestion at Forge Lane/Crutches Lane. The Applicant's responses to these points are addressed in items 2.1.8, 2.1.9 and 2.1.10 and 2.1.13 of the HPC SoCG **A2 Capacity – 4 Lanes to 2 lanes** The Applicant notes under this section HPC has commented on concerns about capacity on the A2 between M2 Junction 1 and Gravesend East. This Applicant's response to this issue is addressed in item 2.1.5 of the HPC SoCG. In response to HPC's comment regarding the two lanes on the M2/A2 between the A122 Lower Thames Crossing and Marling Cross junction, the Applicant considers that it is normal practice to reduce the number of lanes through a junction to cater for traffic leaving before and re-joining after the interchange. The section of the M2/A2 that the Council is concerned about has two new additional parallel lanes in both direction which takes some of the existing local traffic and would have a lower amount of traffic on the A2 because of the reduction in traffic on this corridor because of the Project. This section has fewer requirements for vehicles to change lanes which also helps with providing a free flow experience.

Rep ID	WR Submitter	WR/Applicant's Response
		A2/A289 Construction Phases The Applicant notes under this section HPC has commented on concerns relating to the impact on A2 to A289 commuter and freight traffic during construction. The Applicant's response to this point is addressed in items 2.1.5 and 2.1.9 of the HPC SoCG [**REP1-114**]. **A2 Operational Phase** The Applicant notes under this section HPC has commented on various aspects of the design, including the gradient of the route into the tunnel and concerns about the visibility of signage. The Applicant's responses to these points are addressed in items 2.1.3 and 2.1.46 of the HPC SoCG [**REP1-114**]. **Dover Traffic Impact – Blue Bell Hill A229/ M20/M2 Junctions** The Applicant notes under this section HPC has commented on the A229/M20/M2 Blue Bell Hill junctions. The Applicant's response to this issue is addressed in item 2.1.25 of the HPC SoCG [**REP1-114**]. **Brewers Road** The Applicant notes under this section HPC has commented on the closure of Brewers Road during construction and changes to the connections at the Brewers Road junction on the A2. The Applicant's responses to these issues are addressed in items 2.1.28 and 2.1.49 of the HPC SoCG [**REP1-114**]. **Noise and Vibration** The Applicant notes that under this section HPC has commented on the impact of construction activities and working hours on residents, and concerns about piling activities. The Applicant's responses to some of these issues are addressed in items 2.1.10 and 2.1.51 of the HPC SoCG [**REP1-114**]. The Applicant would also add that measures for the control of noise and vibration from construction works are secured within ES Appendix 2.2: Code of Construction Practice [**REP1-157**] under Register of Environmental Actions and Commitments items NV001 to NV010 and NV017. **Agricultural Land** The Applicant notes that under this section HPC has commented on the impact of the Project on Grade 1 & 2 agricultural land. The Applicant's response to this issue is addressed in items 2.1.43 of the HPC SoCG [**REP1-114**]. **Ancient Woodland** The Applicant notes that under this section HPC has commented on concerns about removal of ancient woodland and protection of environmental mitigation for protected species. The Applicant's response to these issues is addressed in items 2.1.37 and 2.1.38 of the HPC SoCG [**REP1-114**].

REP1-375 Kent and Medway Economic Partnership (KMEP)

Rep ID	WR Submitter	WR/Applicant's Response
REP1-375	Kent and Medway Economic Partnership (KMEP)	**WR:** WR link: **REP1-375**
		Applicant's Response: The Applicant welcomes the support for the Project expressed in the Kent and Medway Economic Partnership's Written Representation [**REP1-375**]. **Wider Network Improvement Requirements** The Applicant recognises that as a result of the Lower Thames Crossing opening, people will choose to make different journeys. In many places on the network, and within Kent, this will lead to beneficial transport impacts on the network, and in some cases will lead to adverse impacts. Overall, the benefits on the road network outweigh the adverse transport impacts, and this is reflected in the positive economic benefit of the Project within Kent. The Applicant has identified the adverse impacts on traffic flows across the Local Road Network (LRN), and this assessment has been set out in section 7.6 of the Transport Assessment [**APP-529**]. The identified wider network impacts have been considered against the relevant policies from the National Policy Statement for National Networks (NPSNN), and other important and relevant policies. National Highways has concluded that the adverse impacts of the Project are acceptable under these policies. The Applicant understands the importance of its statutory obligations as the strategic highways authority and continues to engage with a number of local highways authorities including Kent County Council and Medway Council. This has been focused on working with them in a collaborative manner on the development of their local plans, effective management of the strategic road network (SRN) and management of the interfaces between the SRN and LRN in their areas. Specifically in Kent, the Applicant has agreed a scope of work and funded this through a Planning Performance Agreement for Kent County Council to undertake a Strategic Outline Business Case (SOBC) study to identify the impacts of the Project on the Kent road network and to assess the business case of potential interventions to optimise the network. The outputs of this study will allow Kent County Council to develop more advanced business cases over the course of the next 10 years through existing processes. The Applicant is proposing a traffic impact monitoring scheme as set out in the Wider Network Impacts Management and Monitoring Plan (WNIMMP) [**APP-545**]. The WNIMMP defines what would be undertaken as a requirement of the draft DCO [**REP1-042**], and separately what will be undertaken as part of the ongoing role of National Highways,

Rep ID	WR Submitter	WR/Applicant's Response
		under licence to the Secretary of State for Transport, as the highway authority, traffic authority and street authority for the SRN. **Minimising Negative Local Impacts** Through the oTMPfC [**REP1-174**] the Applicant is committed to the provision of a Traffic Manager and setting up a Traffic Management Forum, with attendees including the local highway authorities in both Kent and Essex. The Traffic Management Forum, is intended to resolve issues through consultation and exploring the local knowledge that the relevant authority possesses and incorporating that knowledge into the Traffic Management Plans (TMPs). These TMPs will be developed post consent and in line with the controls and commitments in the oTMPfC. The relevant local highway authority will be a consultee when developing TMPs. The TMP, which must substantially accord with this oTMPfC, is legally secured under Requirement 10 in Schedule 2 to the draft DCO [**REP1-042**]. The mitigation and control of construction environmental impacts including air quality, noise and vibration impacts are identified and secured through ES Appendix 2.2: Code of Construction Practice [**REP1-157**] and Requirement 4 in Schedule 2 of the draft DCO [**REP1-042**]. The Environmental Management Plan (Third Iteration) must address matters relevant to the operation and maintenance of the Project as secured through Requirement 4(6) in Schedule 2 of the draft DCO. **Sustainable and Active Transport Opportunities** The Applicant recognises the opportunity to, and importance of, improving sustainable transport provision across and along the river. The Applicant notes that the Project will provide the infrastructure improvements that may facilitate this. By providing the north–south connection and junction improvements, the whole of the Project route will be accessible to local and longer distance public transport routes, if operators choose to make use of it, including operators supporting, e.g., cross-river WCH transit (by bus). The Applicant considers that local authorities are best placed to lead on the development and appraisal of future public transport projects including ferry and bus services across the river. The Applicant has set up a Sustainable Transport Working Group involving local authority stakeholders to investigate sustainable travel and cross-river connectivity enhancements that could be delivered in future to complement the Project. The Group has proposed several local priorities and opportunities for feasibility studies for future funding applications for Designated Funds. Designated Funds are very much considered the appropriate mechanism for providing these measures, which fall outside of the remit of the DCO, but may be facilitated by it to lead to improvements in sustainable modes and forms of transport across the river.

REP1-376 Kent Countryside Access Forum

Rep ID	WR Submitter	WR/Applicant's Response
REP1-376	Kent Countryside Access Forum	**WR:** WR summary: **REP1-376** WR link: **REP1-376**
		WR Extract: The proposed Option B crossing site at Swanscombe was rejected due to the conflict with the Paramount/ London Resort development. With the creation of the SSSI on part of the Peninsula, this development looks extremely unlikely to now go ahead. Could this not be re-evaluated?
		Applicant's Response: The decision not to take forward Location Option B in 2013 considered the impact on the Ebbsfleet Valley development. Any link at Location Option B would need to connect to the A2 which sits south of Ebbsfleet valley and so the finding is unchanged by the Site of Special Scientific Interest (SSSI) designation of the Swanscombe peninsula. It should be noted that the recent designation creates a new constraint to development in this region. Location Option B was predicted to have a significant adverse impact on committed development, in particular the Ebbsfleet Valley Development. The approach to Design, Construction and Operation in 2018 considered the changes in planning policy, and specifically updates to local plans since 2013. In 2014 the Gravesham Local Plan was adopted and in 2017 the Dartford Local Plan was adopted. In 2015 the Ebbsfleet Development Corporation became the planning authority for Ebbsfleet Garden City, the area of redevelopment of the Swanscombe Peninsula. These updated Local Plans reinforce the strategic nature of this site. In 2020, Dartford consulted on a developing new local plan. This was additionally reviewed, and the sites' remained strategically important with no significant reduction in the planned development in this area. Accordingly, the decision not to take forward Location Option B remains valid. For more information, see Section 5.4 of the Planning Statement [**APP-495**].
		WR Extract: Why was a crossing East of Tilbury through to the Isle of Grain using an upgraded A289/ A228 not considered? This would have had less impact on the environment and could have served the large housing developments and existing industrial areas on the Isle of Grain.
		Applicant's Response:

Rep ID	WR Submitter	WR/Applicant's Response
		During the development of the Project, the Applicant and the Department for Transport (DfT) considered various options carefully with regards to how each would contribute towards the Scheme Objectives agreed with DfT. The Scheme Objectives are set out in Need for the Project [**APP-494**]. Public consultations have been carried out at appropriate points during the Project's development. The Applicant has considered reasonable route alternatives to the Project, and these are detailed in Environmental Statement (ES) Chapter 3: Assessment of Reasonable Alternatives [**APP-141**]. More information about the decision-making process that led to the identification of the preferred route can be found in Section 5.4 of the Planning Statement [**APP-495**], with information about the subsequent design development in the Project Design Report [**APP-506**]. In recognising the preliminary nature of the assessments within the 2009 study, the decision not to take forward locations D1, D2 and E was reassessed in 2018, as reported in the Approach to Design, Construction and Operation (Highways England, 2018), and again in preparation of this application, to determine whether changes that had arisen since 2009 would lead to a different decision. The 2009 study determined that overall, Location Options D and E were predicted to generate only a fraction of the Wider Economic Benefits of Location Options A, B and C in that they would not serve long distance traffic movement from the South East to the Midlands and North, to the beneficial national, strategic and regional extent that Location Options A, B and C would.
		WR Extract: We believe the proposed crossing at Shorne will provide little extra capacity but would significantly damage both the natural environment and the lives of many people living in, working in and visiting this part of North West Kent. The area through which it is due to be constructed is valuable countryside with good public access and a vital green space between the growing urban areas of Gravesham and the Medway towns. This area also has significant cultural and historical interest with its links to Charles Dickens, military heritage sites and a number of Listed Buildings. The proposed south of the river route would adversely affect several sites with special scientific and nature protection designation.
		Applicant's Response: **Route will add little capacity** The number of lanes along the route has been adjusted over time as part of the ongoing design development process, informed by the Applicant's traffic modelling. Traffic modelling submitted as part of the Application confirms that the Project route and its junctions would remain free-flowing for the foreseeable future.

Rep ID	WR Submitter	WR/Applicant's Response
		For more information about the design of the Project, see the Project Design Report [**APP-506 to APP-515**]. Information about the Applicant's traffic modelling can be found in the Traffic Forecasts Non-Technical Summary [**APP-528**]. **Damage environment & countryside that is valuable** ES Chapter 1 [**APP-139**] summarises the key national and local policy documents relevant to the environmental assessment of the Project. The relevant policies within these plans are further discussed in Chapter 7 of the Planning Statement [**APP-495**] and in Appendix C to the Planning Statement [**APP-498**]. In addition, each chapter of the ES identifies the relevant legislation and policy in a separate appendix. Chapter 3 of Need for the Project [**APP-494**] identifies the strategic need for the Project in national, regional and local level policy documents. Chapter 6 of the Planning Statement [**APP-495**] assesses the potential benefits and adverse effects of both the construction and operation of the Project to demonstrate accordance with National Policy Statements (NPSs) for National Networks and Energy. Chapter 7 gives consideration to a number of 'other matters' including the NPS for Ports, the National Planning Policy Framework and local development plan policy. Chapter 8 of the Planning Statement [**APP-495**] describes the planning balance, which weighs in detail the adverse impacts against the benefits of the Project. It concludes at paragraph 8.7.34 that: '*In light of all of the above, it is the Applicant's view that there is a clear, overriding and compelling case in the public interest for the Project. Accordingly, the policy presumption in favour of the Project and the overall planning balance lie strongly in favour of the grant of development consent.*' **Cultural and heritage impacts** Mitigation has been proposed to avoid, reduce or compensate for adverse impacts to heritage assets in accordance with paragraph 5.139 of the NPSNN. In line with Requirement 9 of the draft DCO [**REP1-042**] mitigation in terms of evaluation and recording of archaeological assets will be undertaken. The ES Chapter 6: Cultural Heritage [**AS-044**] concludes that the Project will have construction and operational effects on archaeological remains, built heritage, historic landscapes and the paleoenvironmental and geoarchaeological resource. The assessment of effects on cultural heritage, reported in the ES Chapter 6: Cultural Heritage [**AS-044**], has identified substantial harm to heritage assets. That harm is justified by the wholly exceptional circumstances that exist in this case in light of the need for and substantial public benefits of the Project,as set out in detail in Need for the Project [**APP-494**] and Chapter 4 (Needs and Benefits) of the Planning Statement [**APP-495**].

Rep ID	WR Submitter	WR/Applicant's Response
		The assessment reported in the ES Chapter 6: Cultural Heritage [**AS-044**], has also identified less than substantial harm to heritage assets which would be outweighed by the substantial public benefits of the Project, as set out in detail in Need for the Project [**APP-494**] and Chapter 4 (Needs and Benefits) of the Planning Statement [**APP-495**]. It is therefore considered that the Project accords with the policies relating to the historic environment set out in the NPSNN and NPS EN-1 (and, in so far as it is relevant to this Project, the draft NPS EN-1). ***SSSI and other protections adversely affected:*** As described in ES Chapter 7: Landscape and Visual [**APP-145**], the Applicant has carried out an assessment of landscape and visual impacts of the Project during construction and operation, following the methodology set out in the Applicant's Design Manual for Roads and Bridges (DMRB), while also having regard to the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment (IEMA), 2013). Landscape considerations include landscape features and elements, landscape character and areas of particular value such as designated landscapes. Visual considerations include visual amenity and views experienced by people from publicly accessible viewpoints and nearby buildings, including residential properties. ES Appendix 7.14: Landscape and Visual Legislation and Policy [**APP-389**] sets out how the Applicant has considered and addressed relevant legislation and had regard to relevant National Policy Statements (NPSs) and other relevant national, county and local plans and policies which relate to the assessment of landscape and visual effects. Policies in the NPSs which relate to decision-making in relation to matters of relevance to this topic of the ES are addressed in the Planning Statement [**APP-495**]. ES Chapter 7: Landscape and Visual [**APP-145**] summarises the significant landscape and visual impacts of the Project during construction and operation. During construction, there would be temporary adverse effects on the landscape character of the Kent Downs Area of Outstanding Natural Beauty (AONB) and on the landscape character in the Green Belt, along with temporary adverse visual effects on users of recreational facilities, residents and people travelling through the study area. During operation, there would be permanent adverse effects on the landscape character of the Kent Downs AONB and on the Green Belt and permanent adverse effects on users of recreational facilities, residents and people travelling through the study area. These effects would reduce by the design year (15 years after opening year) as planting mitigation matures. Section 7.5 of ES Chapter 7: Landscape and Visual [**APP-145**] sets out the proposed mitigation to reduce the landscape and visual impacts to what the Applicant considers acceptable levels, given the requirements and benefits of the Project.

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		It is demonstrated in Chapter 8 of the Planning Statement [**APP-495**] that the need for the Project and the benefits it would deliver outweigh the landscape and other impacts and so accord with the requirements of relevant NPSs and other policy. The effects of the Project on Terrestrial Biodiversity have been assessed within ES Chapter 8: Terrestrial Biodiversity [**APP-146**] including assessments of designated areas, such as Sites of Special Scientific Interest (SSSIs) and ancient woodlands and veteran trees. It is explained in Section 8.3 of ES Chapter 8 that the assessment has regard to both direct and indirect impacts, including severance or fragmentation of habitats or wildlife corridors. ES Chapter 8 describes the magnitude of the impacts, and the measures proposed to avoid, reduce, and compensate for the effects on sensitive ecological receptors, including ancient woodland and veteran trees. The Applicant recognises the irreplaceable nature of ancient woodland and veteran trees. Impacts upon ancient woodland and veteran trees have (amongst other environmental impacts) been considered throughout the route options selection process, and the Project's impacts on these areas have been reduced through its design, while still achieving the Scheme Objectives, as set out in Need for the Project [**APP-494**]. This design is reported within the Planning Statement [**APP-495**], specifically Chapter 5: Project evolution and alternatives, and Chapter 8: Planning balance and conclusions. The Project would result in the direct the loss of 5.35ha of ancient woodland south of the River Thames, and 1.57ha north of the River Thames; a total of 6.92ha. Where these impacts on ancient woodland cannot be avoided, compensatory woodland planting is proposed to offset the impacts. While ancient woodland cannot be replaced, new woodland planting would be designed to strengthen connectivity between existing retained woodland areas, particularly around Shorne and Ashenbank Woods SSSI, Claylane Wood, Great Crabbles Wood SSSI and Jeskyns Community Woodland to the south of the A2/M2. North of the River Thames, ancient woodland compensation planting is primarily proposed around Folkes Lane and Hole Farm with some immediately adjacent to Rainbow Wood Shaw. This would build resilience into the wider network of designated sites and habitats and support a large number of species. ES Figure 8.33 [**APP-294**] shows the locations of ancient woodland impacts and compensation planting areas. The national need and benefits which would be delivered by the Project clearly outweigh the loss of ancient woodland and veteran trees, as per the policy test at NPSNN paragraph 5.32. Specific ancient woodland compensatory planting proposed by the Project totals 48.75ha south of the River Thames and 32.00ha north of the River Thames: a total of 80.75ha. Further details of this habitat creation are provided in ES

Rep ID	WR Submitter	WR/Applicant's Response
		Figure 2.4: Environmental Masterplan [APP-159 to APP-168], the Design Principles [APP-516], and the outline Landscape and Ecology Management Plan [APP-490]. ES Chapter 8: Terrestrial Biodiversity [APP-146] includes an assessment of designated areas, including Shorne and Ashenbank Woods SSSI and local wildlife sites including Low Street Pit, Blackshots Nature Reserve, Mucking Heath, Rainbow Wood Shaw and Canal and Grazing Marsh Higham Local Wildlife Sites. The Planning Statement (Section 6.5) provides an assessment of the Project against relevant policy relating to SSSIs and demonstrates that the need and benefits of the Project outweigh moderate adverse harm identified in the ES. The Planning Statement also provides an assessment of effects on Local Wildlife Sites and notes that the Project has sought to minimise impacts where possible and provide compensation for losses to seek to retain the function of these sites as far as practicable. A Habitats Regulations Assessment (HRA) [APP-487] has also been carried out to identify any likely significant effects of the Project on European designated sites, including the protected areas in and around the Thames Estuary. Habitat functionality enhancement measures to reduce the effects of land take and disturbance on the Thames Estuary and Marshes SPA and Ramsar site are described in paragraphs 7.1.21 to 7.1.37 of the HRA [APP-487]. This report also demonstrates the suitability of proposed mitigation for effects on European sites (Section 7).
		WR Extract: The present Dartford tunnels see the greatest congestion through constant closure due to hazardous loads, over height vehicles and the difficulty in clearing minor accidents and broken-down vehicles. We are sure a new tunnel East of Gravesend would suffer from similar operational problems. In contrast, since the removal of the toll booths, the QE2 bridge generally flows freely. The underlying cause of congestion at Dartford, we believe, is deeper routed with lack of road capacity along the A13 and at its junction with the M25. With major transportation developments such as London Gateway, East of Tilbury we see the new crossing as simply wishing to transfer this problem to the already at capacity A2/M2 and A20/M20 routes. This has become even more relevant since the removal of the C variant A229 upgrade mentioned in the 2013 proposals.
		Applicant's Response: The number of lanes along the route has been adjusted over time as part of the ongoing design development process, informed by the Applicant's traffic modelling. Traffic modelling submitted as part of the Application confirms that the Project route and its junctions would remain free-flowing for the foreseeable future.

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		For more information about the design of the Project, see the Project Design Report [**APP-506 to APP-515**]. Information about the Applicant's traffic modelling can be found in the Traffic Forecasts Non-Technical Summary [**APP-528**]. The Applicant has produced a Cumulative Effects Assessment presented at ES Chapter 16 [**APP-154**] which considers both inter- and intra-project effects. Assessments of the relevant local plans can be found in Planning Statement Appendix C [**APP-498**]. In all instances, the land impacted or required for the Project has been minimised, including the number of homes that would be demolished, while ensuring there is sufficient land to build and operate the road. Detailed information about the decision-making process that led to the identification of the preferred route is included within Section 5.4 of the Planning Statement [**APP-495**]. The subsequent design development and refinement is discussed in the Project Design Report [**APP-506**]. The Project would include junctions with key parts of the strategic road network (SRN), namely the A2/M2, A13/A1089 and M25. It would also provide connections to a limited number of local roads. The changes to the road network where the Project and the M25 meet are designed to maintain safety and promote free-flowing traffic, and to increase the capacity of junction 29. The layout of the junctions has been designed to ensure the safe management of traffic, while also providing local access to the A127. The desire to provide more local connections to and from the Project must be balanced against the need to ensure free-flowing connections with the SRN and safety for all road users. Other considerations are increased traffic on local roads arising from additional connections and increased environmental effects associated with large junctions. Where direct local connections are not provided, it is generally possible to connect to the Project by first joining roads on the SRN that are served by the proposed junctions. The Applicant carried out thorough investigations into different junction locations and route alignments and found the current version of the Project to be the one that best satisfies the Scheme Objectives, following consultation on and further investigations into the connection points. An improved link to the M20 has been the subject of previous consideration. The 'C variant' option of the Project, which would have widened the A229 between the M2 and M20, was not taken forward due to high costs, environmental impacts, issues with connectivity to the Dartford Crossing, and failure to meet the Scheme Objectives.
		WR Extract: **Impact of the Development (South of the River).** i. Motorised Traffic.

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		The LTC A2/M2 junction looks unworkable in the space available and in relation to the adjacent junctions. Without the upgrades to the A229, originally proposed as part of Option C -Variant, LTC is a road to nowhere. The predominantly freight traffic will be heading for the Channel ports but the M2/A2 is not the preferred route. There are poor links through to the M20 towards Folkestone and Dover.
		Applicant's Response: Detailed information about the decision-making process that led to the identification of the preferred route is included within Section 5.4 of the Planning Statement [**APP-495**]. The subsequent design development and refinement is discussed in the Project Design Report [**APP-506**]. The Project would include junctions with key parts of the SRN, namely the A2/M2, A13/A1089 and M25. It would also provide connections to a limited number of local roads. The Applicant carried out thorough investigations into different junction locations and route alignments and found the current version of the Project to be the one that best satisfies the Scheme Objectives, following consultation on and further investigations into the connection points. An improved link to the M20 has been the subject of previous consideration. The 'C variant' option of the Project, which would have widened the A229 between the M2 and M20, was not taken forward due to high costs, environmental impacts, issues with connectivity to the Dartford Crossing, and failure to meet the Scheme Objectives. Chapter 7 of the Transport Assessment [**APP-529**] identifies the potential adverse impacts on the A229. It also notes the beneficial journey time and reliability impacts on the network, notably at the Dartford Crossing. Kent County Council is currently developing a Strategic Outline Business Case seeking DfT funding for improvements to the A229 Bluebell Hill M2 and M20 junctions due to existing traffic flows in this location. Overall, the benefits on the road network would outweigh the adverse impacts, and this is reflected in the positive economic benefit of the Project as a whole, and within each affected local authority area. Monitoring of the impacts of the Project will take place as set out in the Wider Network Impacts Management and Monitoring Plan [**APP-545**], which will help inform the development of future schemes to come forward in their own right.
		WR Extract: Traffic on local roads, we believe something not investigated fully by National Highways, will greatly increase. These roads are predominantly narrow single carriage way and single track roads. This will especially be the case when there is congestion, an accident or other issue on the new crossing. When the existing Dartford Crossing is closed or

Rep ID	WR Submitter	WR/Applicant's Response
		severely delayed local roads around Thurrock and Dartford become gridlocked, often for many hours, after the crossing is reopened and then running normally.
		Applicant's Response: The forecast changes to traffic flows are presented in Appendix C – Transport Forecasting Package of the Combined Modelling and Appraisal Report [**APP-522**]. Traffic modelling submitted as part of the Application shows that, compared with the situation without the new road crossing, the overall level of traffic using the Dartford Crossing is forecast to fall by an average of 19% in 2030 during the peak hours and remain below current levels for the foreseeable future. Average speeds on that part of the network would rise and journey times would become more reliable. In addition, the Project is forecast to result in reductions in traffic on some parts of the SRN and some local roads. While there would be negative impacts on traffic flow in some locations, the Applicant considers that no additional interventions are necessary beyond the proposals presented in the Application. Overall, the transport benefits of the Project clearly and significantly outweigh the negative impacts on the road network, with the Project fulfilling the Scheme Objective to relieve the congested Dartford Crossing, outlined in Need for the Project [**APP-494**]. The Applicant proposes to monitor the impacts of the Project on traffic on the local and strategic road networks as set out in the WNIMMP [**APP-545**]. If the monitoring identifies issues or opportunities related to the road network as a result of traffic growth or new third-party developments, then local authorities would be able to use this as evidence to support scheme development and case-making through existing funding mechanisms and processes. The Applicant is obligated to work with local highway authorities and others to align national and local plans and investments, balance national and local needs, and support better end-to-end journeys for road users (paragraph 5.19 of Highways England: Licence (Department for Transport, 2015a)). More information on the predicted traffic impacts during construction and operation is available in the Transport Assessment [**APP-529**].
		WR Extract: **ii. Non-motorised users (NMUs).** There are large areas of countryside and coastal access land around the proposed development site. With the increase in development in the County NMUs, whether recreational of local residents going about their daily business, find using local roads intimidating and feel in danger. This will of course become far worse both during and after construction of the crossing. There are also design issues that highlight this lack of thought for NMUs.

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		Applicant's Response: National Highways is one of the biggest builders of pathways in the UK and the Project would add or improve more than 40 miles in total: three miles for every one mile of new road. These new or improved pathways are designed to encourage active travel and promote health and wellbeing across the region. The plans include seven new green bridges to provide safe and easy crossings for people and wildlife, including an 84m-wide bridge in Kent, one of the widest green bridges in Europe. New footbridges, two over the A127 and one over the M25, will create safe, easy crossing points and restore links severed by historic road building. For more information about the proposed routes for walkers, cyclists and horse riders, see the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**]. The Health and Equalities Impact Assessment [**APP-539**] addresses the health impacts associated with access to open space and active travel in Sections 7.4 and 7.5.
		WR Extract: There are proposals for a safe green bridge across the A2/ slip roads at Shorne but where NMUs would previously have to cross the quiet single track Darnley Lodge Lane (USRN: 15701235, sometimes called Thong Lane/ Old Watling Street) this road will become a busy single carriageway road linked through to Marlin Cross.
		Applicant's Response: The design of all green bridges proposed as part of the Project is reported in Project Design Report Part D: General Design South of the River [**APP-509**]. All three green bridges within Kent are maintaining road connections that already exist in those locations to avoid severance impacts as a result of the Project. The specific design principles for green bridges are reported in Design Principles [**APP-516**].
		WR Extract: We cannot see any safe crossing of this new 'upgraded' road so NMUs can access the open spaces and public rights of way in Shorne and Ashenbank woods and Jeskyn's' community woodland. We are sure there are other instances of this within the proposals, but the plans don't show enough detail or are unclear. The Tollgate A227/ A2 junctions, Hever Court Road/ Valley Drive/ Henhurst Road junctions and crossing the A226 to access the marshes to the north must all have suitably prioritized, safe and accessible crossings for NMU's.

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		Applicant's Response: The Applicant's strategy for maintaining, upgrading and improving the walking, cycling and horse riding (WCH) networks near the Project has been to examine the existing network and how this could be improved, considering which areas around the Project it would be most advantageous to link or provide access to, and how working with the existing network could best facilitate this. All new routes would be designed to the latest standards, for example, where the Applicant is proposing new cycle routes that follow the alignment of an existing road, the cycle track would be separated from motor traffic. Where WCH share routes, the Applicant would ensure they are able to do so safely by providing appropriate width and segregation where practicable. The proposals were formulated after engagement with stakeholder groups including local authorities, Sustrans, Cycling UK, the Ramblers Association and the British Horse Society. The proposals for 60km of new and upgraded routes provide a significant improvement in quantity and quality over the current facilities for WCH near the Project. Details of the proposed routes can be found within the Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**]. The Design Principles [**APP-516**] explain which standards would be applied to new and upgraded WCH routes. The Applicant has sought to reduce severance of roads and PRoWs once the Project is operational. All roads crossing the Project would be maintained, with the exception of Hornsby Lane, which would require a section near the new route to be permanently closed. This closure would avoid having to move some overhead lines closer to properties in Chadwell St Mary. Alternatives to using Hornsby Lane would be available via the A1013 and Heath Road. Temporary restrictions due to construction are shown in the Streets Subject to Temporary Restrictions of Use Plans [**APP-027** and **APP-029**], which shows roads that would be subject to temporary alteration, diversion and restriction of use. The Project has sought to ensure that all WCH routes that will be severed by the route (and historic severances where reasonably practicable) will be reconnected. As part of the wider WCH strategy, routes have been upgraded to improve connectivity and access for more users. Where appropriate bridges have been designed to accommodate active travel, and tie into the wider footpath and bridleway network. The WCH strategy has also explored improving and enhancing WCH network connectivity between the surrounding communities. Total additional and improved provision equates to 64km of routes. These are summarised in Table 13.54 of ES Chapter 13: Population and Human Health [**APP-151**]. Since the Statutory Consultation in October 2018, following further engagement with key stakeholders including the host local authorities, a set of proposals was put together to maintain, improve and upgrade routes in the vicinity of the Project for walking, cycling and horse riding. These proposals were presented during Supplementary

Rep ID	WR Submitter	WR/Applicant's Response
		Consultation in January 2020, with further revisions presented during Design Refinement Consultation in July 2020 and the Community Impacts Consultation in July 2021. Information about the impact of the Project on PRoWs can be found in the Transport Assessment [**APP-529**]. Impacts on PRoW during the construction and operational phases of the Project are also assessed in ES Chapter 13: Population and Human Health [**APP-151**].
		WR Extract: **Mitigation and Countryside Access Improvements** The new and improved proposed routes for walkers, cyclists and equestrian are of course welcome. We are aware that the British Horse Society has been working closely with National Highways and are happy with the new routes and proposed surfacing. From experience we know that to maintain public access on these routes going forward the proposed designs must be implemented and it is vital that all of these new public rights of way are made Definitive Public Rights of Way at Bridleway Status as a minimum to protect public access.
		Applicant's Response: Throughout the design process, the strategy for providing improvements for Walking, Cycling and Horse Riding (WCH) has been developed, taking onboard comments received through the statutory and formal consultation process. In parallel with the development of the Statutory Consultation design, a Walking, Cycling and Horse Riding Assessment (WCHAR) was carried out. This explored the existing PRoW network, national and local policies, local demographics, existing/future trip attractors, commuter routes, and consultation feedback to determine where there might be strategic opportunities for Walkers, Cyclists and Horse-riders. As part of this process key stakeholders, including local councils and interest groups such as Sustrans, The Ramblers, and British Horse Society, were consulted. Details of existing and proposed Public Rights of Way (PRoW) and general provision for Walkers, Cyclists and Horse Riders (WCH) can be found in: • Rights of Way and Access Plans Volume B (sheets 1 to 20) [**APP-025**] and Rights of Way and Access Plans Volume C (sheets 21 to 49) [**AS-032**] • ES Figure 13.4: Population and Human Health Assessment – Proposed WCH Links [**APP-320**] • Transport Assessment Appendix A: Public Rights of Way [**APP-530**] • Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**]

Rep ID	WR Submitter	WR/Applicant's Response
		In addition to the above information and subject to agreement by the Examining Authority, the Applicant intends to publish a new set of plans at Deadline 2 which will draw together all the various sources of WCH information into a single place.
		WR Extract: In Shorne and Ashenbank Woods the resurfacing of Public Byways NS195 and NS311 are welcome but, it should be remembered that the section suffering from poor surface conditions has only been a problem since the byways were diverted and remodelled following the HS1 rail link project! NS195/311 are an important part of the mere 5% of Kent's PRoW network that are open to ALL traffic including horse drawn and light motorised vehicles. This use should not be restricted. There are problems with how the proposals treat the National Cycle Routes affected by the development. Surfacing is a major concern; these are at present hard surfaced routes used by recreational and commuter cyclists using road bicycles. Cyclists do not want gravel/ loose surfaces for national Cycle Routes and many are concerned about sharing sections with equestrians and pedestrians. All routes should remain open and usable throughout construction work and if the tunnel is completed and operational.
		Applicant's Response: The exact type of surface for WCH routes has not been determined. The type of surface and widths would be specified during the detailed design phase in accordance with design standards and the Design Principles [**APP-516**], with the most appropriate option being used for each route. The Project Design Report [**APP-506** to **APP-515**] includes indicative information about surfacing for new and upgraded routes, although the final details of these would be decided by the appointed Contractors within the parameters of the assessment.
		WR Extract: To the southern side of the development area NCR177 is due to be diverted south of the A2 across HS1 and the A2 via the bridges that form Footpath NS195A then along part of Byway NS195. Cyclists should not be forced to dismount on the railway crossing and the surfaces of NS175A and NS195 are not suitable for a National Cycle Route.
		Applicant's Response: **National Cycle Route 177 and equestrian provision** In response to feedback received during the Local Refinement Consultation in May 2022, the Applicant revised proposals for a temporary route for National Cycle Route (NCR) 177. This route, south of the A2/M2, was previously proposed to be used during construction, and then to become a permanent bridleway.

Rep ID	WR Submitter	WR/Applicant's Response
		However, feedback was received from the Woodland Trust with regards to the proposed route's negative impacts on Ashenbank Wood due to increased usage of the existing Darnley Trail. This is a permissive route open to pedestrians, cyclists and horse-riders. Resurfacing of this section of the Darnley trail is required to facilitate its temporary use as a National Cycle Route. As a consequence of the Woodland Trust's comments this surface will now be removed when the permanent alignment of NCR177 is available and access rights will remain permissive, as existing. Therefore, there would be no permanent impacts on woodland or habitat in these areas and no impact on existing access rights for WCH. At Jeskyns a new bridleway was previously proposed between the east and west boundaries of the site. Feedback from Forestry England cited concerns about site management and interactions between different user groups, therefore they were not in favour of this new bridleway. As this is Crown land the Project has no power to designate a PRoW without consent. Consequently, a new section of temporary permissive cycle route is now proposed through the eastern part of the site, with surface improvements to existing permissive routes further west. The existing horse-rider trail within Jeskyns will remain available to horse riders and will not be permanently impacted. There will be a new permissive bridleway link between this existing trail and Henhurst Road to increase east-west connectivity for horse-riders. Once works are complete the future of these new permissive routes at Jeskyns will be at the discretion of Forestry England. Once the Project is complete, NCR 177 would be realigned south of the A2/M2 along a new local road and outside of both Ashenbank Wood and Jeskyns Community woodland.
		WR Extract: The creation of the new Chalk Park is welcomed by local people. The mitigation land set aside for nature conservation is also welcome but we would ask that public access is also provided.
		Applicant's Response: Chalk Park is an embedded design feature to mitigate the impact of the Project as well as integrate the portal and route alignment into the surrounding landscape. The feature is secured through clause S3.04 of Design Principles [**APP-516**]. The key drivers for the inclusion of Chalk Park within the Project proposals and its design rationale are set out in Project Design Report Part D: General Design South of the River [**APP-509**]. This commitment is secured through its inclusion in the Register of Environmental Actions and Commitments in ES Appendix 2.2: Code of Construction Practice, First Iteration of Environmental Management Plan [**REP1-157**]. Establishment of the mitigation and compensation areas, including Chalk Park, would be undertaken on behalf of the Applicant by the appointed Contractors. Ongoing (long-term) management, maintenance and monitoring, beyond

Rep ID	WR Submitter	WR/Applicant's Response
		initial establishment periods, would be delivered by the Applicant's' Operational and Maintenance teams or through agreement with third parties (to be confirmed). For more information, see paragraph 4.1.1 of the oLEMP [**APP-490**].
		WR Extract: We would like to see, as part of legacy projects from LTC more routes suitable for equestrian users from Cyclopark over the A2 at Hever Court Road/ Valley Drive/ Henhurst Road roundabouts through to Jeskyn's and Shorne. Although Public Right of Way NS175A was shown as a bridleway, both during the Channel Tunnel Rail link and A2 widening consultations, it was only given footpath status on completion. Local Parish Councils as well as NMU user groups have been trying to have this corrected for some years. Continually Railtrack/ HS1 have prevented this by saying their bridge is not suitable for ridden horses and won't have the bridge sides raised up.
		Applicant's Response: Information about the impact of the Project on PRoWs can be found in the Transport Assessment [**APP-529**]. Impacts on PRoW during the construction and operational phases of the Project are also assessed in ES Chapter 13: Population and Human Health [**APP-151**].
		WR Extract: There is also an opportunity for improved public access out to the England Coastal path. There are few places accessible to the public to join the path along this section.

REP1-387 Morzine Limited

Rep ID	WR Submitter	WR/Applicant's Response
REP1-387	Morzine Limited	**WR:** WR link: **REP1-387**
		WR Extract: **Impact and congestion** Inadequate information has been submitted to show that the impact at (A13/A1014) The Manorway Interchange and (A13/A128) Orsett Cock Roundabout have been properly assessed. Both are located along the main point of access to TEP. The application, therefore, fails properly to assess congestion and capacity issues at these Junctions or consider whether and to what extent these impacts need to be mitigated.
		Applicant's Response: It is the Applicant's consideration that the Orsett Cock junction performs acceptably and that, overall, the benefits on the road network would outweigh the adverse impacts. This is reflected in the positive economic benefit of the Project. However, the Applicant considers that there would be sufficient flexibility within the Order Limits and the powers set out within the draft DCO [**REP1-042**] that would enable further improvements to the operation of the Orsett Cock junction to be identified through detailed design. The Applicant contends that this is a normal part of the design process. At the Manorway junction, the junction is forecast to be busy in 2030 without the Lower Thames Crossing in operation, and the Applicant does not consider that physical intervention at the junction is required as a result of the Lower Thames Crossing.
		WR Extract: **Access in and out of TEP** Congestion on the local highway network, due to the proposed LTC development, has the real potential to create significant adverse impacts at The Manorway Interchange and Orsett Cock Roundabout, which in turn would impact access to and from TEP.
		Applicant's Response: The Applicant recognises that once the Project opens for traffic, there will be changes in how traffic flows across the region. Many parts of the network, including within Thurrock, would experience significant benefits on both journey

Rep ID	WR Submitter	WR/Applicant's Response
		times and journey reliability, whilst other locations would experience adverse impacts. Overall, the benefits on the road network would outweigh the adverse impacts. This is reflected in the positive economic benefit of the Project as a whole, and within Thurrock as set out in Chapter 5 of Need for the Project [**APP-494**], Chapter 4 of the Planning Statement [**APP-495**] and Combined Modelling and Appraisal Report Appendix D [**APP-525**, **APP-526** and **APP-527**]. However, the Applicant considers that whilst there may be some localised additional delay in some locations as a result of the Project, such as at the Orsett Cock junction, this is outweighed by the significant traffic relief and shorter routes that the Project would enable. Within the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [**APP-522**] the Applicant has presented a series of route based journey times (from paragraph 8.2.14 onwards). This includes DP World as one of the start/end points. This shows that on each route to/from DP World that there would be a reduction in journey time across all three of the modelled time periods. The Manorway junction is forecast to experience delays and congestion without the Project. The Applicant's forecasts as shown in the Traffic Forecasts Non-Technical Summary [**APP-528**] indicate there would be additional traffic on the A13 as more people cross the Thames for business, leisure, or to access services. At the Manorway junction the A13 reduces from three lanes to two lanes and this causes some delay to traffic wishing to join the A13 eastbound at this junction. The impact of the Project is indirect, as it would lead to increased flows on the A13 mainline.
		WR Extract: **Construction phasing and timing** Further concerns in relation to construction timing and phasing, route choice, route availability and the number of U-turn movements which would be diverted to the Manorway Interchange due to the proposed layout of Orsett Cock Roundabout – particularly at the A13/LTC junction, and the network operation and traffic flow.
		Applicant's Response: The Applicant's traffic modelling shows that there would be a very low number of vehicles (which originate from the A128 north of the Orsett Cock junction and wish to use the Project) U-turning at the Manorway junction as a result of the layout of the proposed A13/A1089/A122 Lower Thames Crossing junction. The performance of the junction within both the strategic modelling and localised traffic modelling for the Manorway junction include this traffic.
		WR Extract: **Communication and Engagement** In response to why LTC had not engaged with TOP more comprehensively, and shared information which had been

Rep ID	WR Submitter	WR/Applicant's Response
		shared with others or entered into a Statement of Common Ground, the response was that 'the line had to be drawn somewhere'. This approach and response fails to appropriately recognise the status of TEP and TOP, and the major contribution to the regional economy each site will deliver individually, and of course collectively. TOP has made numerous representations (which are attached), unfortunately, the level of engagement has not been to the level expected bearing in mind the importance of TEP and TOP to the local, regional and national economy.
		Applicant's Response: The Applicant's response to engagement with Morzine to date is set out in the following paragraphs. The Applicant appreciates Morzine Limited's position, would welcome further engagement and will seek to arrange the more detailed engagement as requested.
		WR Extract: **Communication and Engagement continued** TOP has attempted to engage directly with LTC over the last 12 months to engage in the consultations process to better understand the LTC's modelling work which has been completed and the outputs from it. However, following an introductory meeting in November 2022, the only meeting date we have been offered this year is Friday 14 July 2022, four days before the deadline for these Written Representations.
		Applicant's Response: The Applicant is aware that the above paragraph has also been raised the Thames Enterprise Park (TEP) Written Representation and would like to provide a complete timeline of events with regard to engagement with TEP. • The Applicant originally met with TEP representatives on 5 February 2020, as an introductory meeting and to provide a briefing on the Supplementary Consultation. Following that, the Applicant sent through key project updates to TEP representatives. • After TEP representatives reached out in late 2022, the Applicant then met with a wider team from TEP in November 2022, to discuss traffic modelling. Following the meeting on 25 November 2022, the Applicant developed an NDA with TEP and then shared the relevant traffic modelling data. • Following NDA sign off in December 2022, the Applicant and TEP representatives met again on 12 January 2023 to further discuss the traffic data which had been shared. • As agreed during the 12 January meeting, the Applicant shared GIS shapefiles from the Lower Thames Area Model with TEP representatives.

Rep ID	WR Submitter	WR/Applicant's Response
		• The Applicant was then keen arrange a follow up meeting to discuss VISSIM modelling with the TEP team. The Applicant reached out to TEP over emails in January and February 2023 requesting availability. • The Applicant followed up again on 12 June 2023 to remind the TEP team about the start of examination and to offer a meeting to discuss any questions. A follow up meeting was arranged for 27 June, which had to be rescheduled to 14 July 2023 due to availability. In the meeting with TEP representatives, the Applicant discussed the VISSIM modelling. • The Applicant is very keen to collaborate with the TEP team, to ensure TEP have a thorough understanding of the Applicant's traffic modelling. The Applicant will therefore look to develop a Statement of Common Ground with TEP.

REP1-408 Shorne Parish Council

Rep ID	WR Submitter	WR/Applicant's Response
REP1-408	Shorne Parish Council	**WR:** WR Link: **REP1-408**
		Applicant's Response: **Section 2 – Rationale Issues** The Applicant notes under section 2 of the Written Representation (WR), Shorne Parish Council (SPC) has commented on Need for the Project [**APP-494**] and the Scheme Objectives. The Applicant's response to these points are addressed in items 2.1.1, 2.1.2, 2.1.4 and 2.1.6 of the SPC Statement of Common Ground (SoCG) [**APP-135**]. **Section 3 – Options Appraisal and Route Selection** The Applicant notes under section 3 of the WR, SPC has commented on crossing locations east of Dartford and Option A interventions. The Applicant's response to these points are addressed in items 2.1.7, 2.1.8 and 2.1.9 of the SPC SoCG [**APP-135**]. **Section 4 – Consultation and Information issues** The Applicant notes under section 4 of the WR, SPC has commented on consultation delivery issues, the presentation of ward summary information, collaboration and information sharing, and 3D modelling. The Applicant's response to these points are addressed in items 2.1.10, 2.1.11, 2.1.12, 2.1.13, 2.1.14, 2.1.15, 2.1.16, 2.1.17 and 2.1.18 of the SPC SoCG [**APP-135**]. In response to SPC's comments about 3D Modelling, the Applicant is preparing vertical cross section plans for Deadline 2. An update on progress has been provided in OFH2 action point 2 – Additional cross sections [**REP1-195**]. **Section 5 – Economics, Cost-effectiveness, BCR Calculation** The Applicant notes under section 5 of the WR, SPC has commented on the calculation of economic benefits, affordability and value for money, other road upgrades and economic disbenefits and severance for Shorne residents. The Applicant's response to some of these points is addressed in item 2.1.3 of the SPC SoCG [**APP-135**].

Rep ID	WR Submitter	WR/Applicant's Response
		In response to SPC's comment about the Benefit Cost Ratio (BCR): The BCR reflects the value of benefits and costs at the time at which it is produced. Many factors that affect the costs and benefits of the Project change over time, partly due to a growing maturity in the design of the Project and changes in the value of benefits. During recent years for example, the Department for Transport (DfT) has changed the value of time savings and the rate of growth of the value of those time savings over time. The BCR of 3.1 dates from the Summary Business Case produced in support of the 2016 route options consultation, and is now seven years old and reflects a scheme at a lower level of maturity. The BCR of 0.48 is only based on the outcome of the Level 1 appraisal, which includes all of the costs and only some of the benefits. The value for money assessment for a scheme under DfT Transport Analysis Guidance (TAG) considers the BCR figure that includes the Level 1 and Level 2 benefits. Section 1.4 of Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [**APP-526**] provides details of how the published central case BCR of 1.22 is derived. The wider economic impact costs associated with the Project have been appraised following DfT TAG. If additional transport schemes outside the scope of the DCO application are proposed in future, their appraisals would include an assessment of both the benefits and costs of such a proposal. It is not necessarily the case that a combined BCR of the Project and any combination of those schemes would be lower than the BCR of the Project alone, as this is dependent on whether the benefits included in the BCR calculation for a particular set of schemes outweigh the costs or not. ***In response to SPC's comment about other road upgrades:*** The Applicant recognises that, as a result of the Project opening, some people would choose to make different journeys. In many places on the network this would lead to beneficial impacts on the network, and in some cases lead to adverse impacts. Overall, the transport benefits of the Project clearly and significantly outweigh the negative impacts on the road network, with the Project fulfilling the Scheme Objective to relieve the congested Dartford Crossing and approach roads, improving their performance by providing additional free-flowing north–south capacity across the River Thames. For more information about the Scheme Objectives, see Need for the Project [**APP-494**]. While there would be negative impacts on traffic flow in some locations, the Applicant considers that no additional interventions are necessary beyond the proposals presented in the application for development consent. For more information about the impacts on the strategic road network (SRN) and local roads, see the Traffic Forecasts Non-Technical Summary [**APP-528**].

Rep ID	WR Submitter	WR/Applicant's Response
		The Applicant is proposing to monitor the impacts of the Project on traffic on the local and SRN. If the monitoring identifies issues or opportunities related to the road network as a result of traffic growth or new third-party developments, then local authorities and the Applicant would be able to use this as evidence to support scheme development and case making through existing funding mechanisms and processes. A WNIMMP [**APP-545**] is included in the Development Consent Order application, providing information about the proposed traffic monitoring. The traffic impact monitoring scheme is secured in Schedule 2 of the draft Development Consent Order(DCO) [**REP1-042**] and would require approval by the Secretary of State, after consultation with relevant local highway and planning authorities, which would begin one year before the tunnel area opens. The Applicant is obliged to work with local highway authorities and others to align national and local plans and investments, balance national and local needs and support better end-to-end journeys for road users (paragraph 5.19 of Highways England: Licence (Department for Transport, 2015)). The Applicant will continue to deliver against this obligation in its collaborative work with local authorities. ***In response to SPC's comment about economic disbenefits:*** Users of the Dartford Crossing and approach roads are forecast to experience journey time benefits and reduced congestion due to the Project. The improved connectivity would boost the productivity of local businesses in the long term. The Applicant is working with stakeholders and intends to provide opportunities for local people to work on the construction and operation of the route and help local businesses form part of the supply chain that would build and operate the route. Steps being taken to deliver economic benefits for the local community include new skills and training for local residents during the construction phase, work placements and careers advice for local students, a pre-employment support programme for long-term unemployed, and support for local business leaders to bid for this and the future pipeline of investment in the region. See Section 7.10 and Table 7.38 of the HEqIA [**APP-539**]. In addition, the Skills, Education and Employment Strategy is included within the Section 106 Agreements – Heads of Terms document [**APP-505**] and this will provide further economic benefits. With regard to economic benefits to the area, the Project aligns with the South East Local Enterprise Partnership strategy regional economic growth. Communities in the region are forecast to receive substantial transport user benefits, which are mainly journey-time savings and productivity benefits. The Project's economic appraisal follows the government guidance set out in the transport analysis guidance (Department for Transport, 2021b). For further information on the economic benefits of the Project and Scheme Objectives, see Need for the Project [**APP-494**] and the Economic Appraisal Report – Combined Modelling and

Rep ID	WR Submitter	WR/Applicant's Response
		Appraisal Report, Appendix D [**APP-526**]. The Appraisal Summary Table within the Economic Appraisal Package, Appendix D [**APP-524**] summarises the Project's cost and benefits, while the Economic Appraisal Report provides more information about the appraisal methods and results. The Benefits and Outcomes Document [**APP-553**] provides a framework to communicate what is being delivered within the Project and some of the wider activities undertaken by the Applicant (both already and planned for the future) in the local area of the Project to support local people and the environment. ***In response to SPC's comment about community severance:*** The Project has sought to reduce severance of roads and Public Right of Ways (PRoWs) once the Project is operational. All roads crossing the Project would be maintained, with the exception of Hornsby Lane, which would require a section near the new route to be permanently closed. The Project has sought to ensure that all walking cycling and horse riding (WCH) routes that will be severed by the route (and historic severances where reasonably practicable) will be reconnected. As part of the wider WCH strategy, routes have been upgraded to improve connectivity and access for more users. Where appropriate, bridges have been designed to accommodate active travel, and tie into the wider footpath and bridleway network. The WCH strategy has also explored improving and enhancing WCH network connectivity between the surrounding communities. Total additional and improved provision equates to approximately 60km of routes. These are summarised in Table 13.54 of ES Chapter 13: Population and Human Health [**APP-151**]. Once the Project is operational, road users in Kent who travel along parts of the A2, M25 and M20, and who use the Dartford Crossing and its approach roads, are forecast to experience quicker journeys and reduced congestion as a result of the Project. There would be benefits to journey times for local people and significant benefits on jobs and training opportunities; walking, cycling and horse riding routes; as well as access to new areas of recreational land at Chalk Park and Tilbury Fields. There would be negative impacts on some other journey times, although the positive traffic impacts of the Project would significantly outweigh the negatives. The Applicant is proposing to monitor the impacts of the Project on traffic on SRN and local roads. If the monitoring identifies issues or opportunities related to the road network as a result of traffic growth or new third-party developments, then local authorities and the Applicant would be able to use this as evidence to support scheme development and case making through existing funding mechanisms and processes. The Wider Network Impacts Management and Monitoring Plan (WNIMMP) [**APP-545**] is included in the DCO application, providing information about the proposed traffic monitoring.

Rep ID	WR Submitter	WR/Applicant's Response
		Section 6 – Traffic Volume Issues The Applicant notes under section 6 of the WR, SPC has commented on the reliability of traffic models, data gathering, and various concerns relating to the output of traffic modelling. The Applicant's response to these points are addressed in items 2.1.55, 2.1.56 and 2.1.59 of the SPC SoCG [**APP-135**]. ***In response to SPC's comments about the age of software and reliability of data:*** The Applicant's traffic modelling has been carried out in accordance with the transport analysis guidance from DfT (2021b) and using data available from 2016. Due to changes in traffic flows as a result of the COVID-19 pandemic, data from after 2019 would not have been suitable for the Applicant's traffic modelling. The traffic model data is collated and used in accordance with DfT guidance. With regard to congestion and time savings, the Applicant's traffic modelling uses the most up-to-date Government guidance at the time of submission, which means opportunities for underestimating traffic flows are minimised and the predictions provide a robust basis upon which to design the Project for expected requirements on opening and for future usage. In response to SPC's comments about impacts not being considered and comments by SPC at ISH1, the Applicant has provided a response in Annex B3 of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**]. **Section 7 – General design issues** The Applicant notes under section 7 of the Written Representation, SPC has commented on the road classification of the Project, hard shoulders, safety and the design change process. The Applicant's responses to some of these points are addressed in items 2.1.18 and 2.1.32 of the SPC SoCG [**APP-135**]. In response to SPC's comments about the road classification, the Applicant has submitted 'Issue Specific Hearing 1 Action number 3 Design and operational distinction between an all purpose trunk road (APTR) and smart motorway' [**REP1-196**], which describes the design and operational distinction between a three lane per side APTR and a Smart Motorway. In response to SPC's comment about emergency areas, as described in the ES Chapter 2: Project Description [**APP-140**], they would be provided on the A122 outside the tunnel at regular intervals no greater than 1,600m. These would be 4.6m-wide places of relative safety (a facility where road users may stop in an emergency) which would be a minimum of 100m long (including tapers). The indicative emergency areas are shown on the General Arrangement Plans [**APP-015** to **APP-017**]. It is important to recognise that the road will be designed to the safety standards current at the time of construction, and the Applicant anticipates that there is sufficient flexibility in the application to be able to accommodate any further developments in this area.

Rep ID	WR Submitter	WR/Applicant's Response
		Section 8 – Specific design issues The Applicant notes under section 8 of the WR, SPC has commented on the connectivity of junctions, the ground protection tunnel and Milton compound and green bridges. The Applicant's responses to these points are addressed in items 2.1.25, 2.1.26, 2.1.28, 2.1.29, 2.1.30, 2.1.31 and 2.1.42 of the SPC SoCG [**APP-135**]. **Section 9 – Traffic issues** The Applicant notes under section 9 of the WR, SPC has commented on resilience, traffic volume on local roads and roads connecting to the Project and non-motorised users. The Applicant's responses to some of these points are addressed in items 2.1.5, 2.1.60, 2.1.61, 2.1.99 and 2.1.100 of the SPC SoCG [**APP-135**]. In response to SPC's comment about increasing bridleway provision south of the A2, the Applicant directs SPC to Section 3 of Post-event submissions, including written submission of oral comments, for OFH2 [**REP1-185**]. In response to SPC's comment about maps for WCH proposals, the Applicant intends to publish a new set of plans at Deadline 2 which will draw together all the various sources of WCH information into a single place. **Section 10 – Landscape and environment** The Applicant notes under section 10 of the WR, SPC has commented on a range of issues concerning landscape, light pollution, air quality, noise and vibration, and biodiversity. The Applicant's responses to these points are addressed in various matters within the SPC SoCG. The following list signposts to these matters within the SPC SoCG [**APP-135**] by topic: • Landscape issue: 2.1.21, 2.1.22, 2.1.23, 2.1.24, 2.1.26, 2.1.27 and 2.1.64 • Light pollution: 2.1.33, 2.1.84 and 2.1.85 • Air Quality: 2.1.70 to 2.1.80 • Noise and vibration: 2.1.92 and 2.1.93 • Biodiversity: 2.1.83, 2.1.86 2.1.87, 2.1.89 and 2.1.90 **Section 11 – Water issues, risks to North Kent Marshes Special Protection Area and Ramsar site** The Applicant notes under section 11 of the WR, SPC has commented on drainage proposals, the water ecosystem of the marshes, the ground preparation tunnel and other water related issues. The Applicant's responses to these points are addressed in items 2.1.67, 2.1.91, 2.1.101, 2.1.102, 2.1.103, 2.1.104, 2.1.105 and 2.1.106 of the SPC SoCG [**APP-135**].

Rep ID	WR Submitter	WR/Applicant's Response
		Section 12 – Construction issues The Applicant notes under section 12 of the WR, SPC has commented on construction staff vehicles, access to compounds, protection of residents and buildings, use of the A226, HGV construction routes, the closure of footpaths and cycle routes and tunnelling concerns. The Applicant's responses to these points are addressed in items 2.1.40, 2.1.41, 2.1.44, 2.1.45, 2.1.46, 2.1.47 and 2.1.48 of the SPC SoCG [**APP-135**]. In response to SPC's comments on the Minor Refinement Consultation, the Applicant is considering these separately and will engage with SPC on the points raised. **Section 13 – Operational issues** The Applicant notes under section 13 of the WR, SPC has commented on the Air Quality, Noise and Vibration, the tunnelling ventilation system, road user charging policy and monitoring during operation. The Applicant's responses to these points are addressed in items 2.1.50, 2.1.51, 2.1.53, 2.1.54 and 2.1.63 of the SPC SoCG [**APP-135**]. ***In response to Road user charging and variable charging:*** As the Road User Charging Statement [**APP-517**] states: '*Gravesham residents would be eligible for discounts for the use of the Lower Thames Crossing … This aligns with the Dartford Crossing* [Local Residents' Discount Scheme] *by limiting eligibility to residents of local authorities in which the tunnel portals would be situated …* *The* charging powers being sought under article 46 of the draft DCO [**REP1-042**] include provision for the Secretary of State to waive and suspend the road user charges at the Tunnel Area in emergencies or exceptional circumstances, which might include failure of, or interruption to, the road user charging systems, and management of incidents or road closures.' The Applicant agrees that for the reasons given, variable charging is not appropriate.

REP1-413 Uniper (MedwayOne)

Rep ID	WR Submitter	WR/Applicant's Response
REP1-413	Uniper (Medway One)	**WR:** WR Link: **REP1-413**
		Applicant's Response: The Written Representation (WR) from Uniper reiterates comments made by them at Issue Specific Hearing 1 (ISH1), which were responded to by the Applicant at Section A.3 of Annexes to Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**] but are expanded upon here for completeness.
		WR Extract: During the planning process for the application for development on the Hoo Peninsula known as MedwayOne (Medway planning application reference MC/21/0979 – resolution to grant subject to S106), National Highways as statutory consultee for the application made a representation requiring that a trip cap be placed on the development restricting the amount of trips that the development can generate on the A2 eastbound to A289 off-slip and A289 to A2 westbound on-slip at M2 junction 1 to an initial cap and afterwards potentially amended through a monitoring and management framework. The Applicant acknowledges that there will be increased traffic flows through M2 junction 1 following the opening of the Project, but this needs to be considered against the overall benefits resulting from the better connections and improved journey times resulting from the Project, as set out in Transport Assessment Appendix F: Wider Network Impacts Management and Monitoring Policy Compliance [**APP-535**]. Unlike a conventional developer, National Highways operates both as the Applicant for the A122 Lower Thames Crossing and as custodian of the strategic road network as set out in the Highways England: Licence (Department for Transport (DfT), 2015). As custodian of the strategic road network, National Highways must consider the provision for sufficient flexibility and future-proofing in planning the long-term development and improvement of the network (paragraph 5.6c). In some instances this requires that National Highways makes decisions relating to the availability of capacity on the network, and results in some reductions in available capacity at certain locations on the network, with potential consequences for new development in that area, in order to optimise the performance of the network overall where necessary to deliver government infrastructure priorities, such as the A122 Lower Thames Crossing.

Rep ID	WR Submitter	WR/Applicant's Response
		Applicant's Response: **Junction 1 of the M2** Uniper state at paragraph 5.1.1 of their WR that '*Plans for the LTC are driven by expected traffic and economic benefits at a national scale. However, these benefits would not be extended to the Hoo Peninsula which would see a worsening of traffic conditions on its strategic routes.'* The Applicant does not agree with this assertion. As shown within the Traffic Forecasts Non-Technical Summary [**APP-528**], the Project is not forecast to change traffic flows on the Hoo Peninsula beyond the A289/A226 junction. In addition, residents and businesses would benefit from the shorter routes across the Thames via the Project, as well as from the relief to the A2 between the M2/A2/A122 Lower Thames Crossing junction and the M25. With regard to M2 junction 1, the Applicant's position is set out in paragraphs A.4.4. to A.4.7 of the Applicant's Post-event submissions, including the written submission of oral comments, for ISH1 [**REP1-183**]. M2 junction 1 is included as one of the monitoring locations set out in the Wider Network Impacts Management and Monitoring Plan [**APP-545**]. The Applicant is proposing to monitor the impacts of the Project on traffic on the local and strategic road networks. If the monitoring identifies opportunities to further optimise the road network as a result of traffic growth or new third-party developments, then this can be used as evidence to support Project development and case making through existing funding mechanisms and processes and inform decisions regarding investment decisions on the strategic road network. The Applicant, as statutory authority for the strategic road network, will continue to work with Medway Council and developers in order to agree the evidence base to support Local Plan work and/or applications and to identify any network interventions required. Paragraph 4.4.7 of Medway Council's Local Impact Report sets out part of this wide work. **Project Transport Assessment and impacts on the Hoo Peninsula** The Applicant is satisfied that the Project's transport model has been produced in line with DfT guidance (Transport Analysis Guidance (TAG)) as set out in the Combined Modelling and Appraisal Report [**APP-518**]. It should be noted that overall growth within the transport model is in line with DfT traffic forecasts as set out in their National Trip End Model and published as TEMPro 7.2 traffic growth forecasts. The Uncertainty Log simply provides additional spatial definition of some of this growth. The Uncertainty Log (both for developments and highway schemes) used within the Project's transport model has been developed following TAG Unit M4, as is set out in Chapter 4 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [**APP-522**].

Rep ID	WR Submitter	WR/Applicant's Response
		Where developments (including MedwayOne) that would otherwise meet the criteria for inclusion in the Uncertainty Log have been excluded from the core scenario, these have been set out within Chapter 4 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [**APP-522**], together with the reason for their exclusion. The emerging development proposals for the Hoo Peninsula set out in the draft Hoo Development Framework (2022) and draft Medway Council Local Plan Development Strategy (Regulation 18 Consultation Report, 2018) as well as employment allocations that do not benefit from a planning application or permission were not included in the Uncertainty Log because they did not meet the criteria to be considered as near certain or more than likely. However, alternative scenarios (high and low growth), in line with TAG, have been undertaken. Chapter 4 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [**APP-522**] includes details of the High and Low growth scenarios, the results of which are presented within Chapter 7 of the Transport Assessment [**APP-529**]. The high growth scenario assesses the impact of the Project on the road network with a higher level of growth than is present in the core scenario. Environmental Statement (ES) Chapter 13: Population and Human Health [**APP-151**] provides an assessment of the Project on development land within 500m of the Order Limits, which includes land allocated by local authorities as well as land subject to planning applications. The emerging proposals for the Hoo Peninsula noted by Uniper in their Written Representation (WR) did not meet the criteria for the assessment of development land presented in ES Chapter 13. The effects from the emerging development plans for the Hoo Peninsula in combination with the Project have been included in the inter-project effects assessment presented in ES Chapter 16: Cumulative Effects Assessment [**APP-154**] and ES Appendix 16.2: Short List of Developments [**APP-484**]. These documents provide an assessment of the Project in combination with the draft Hoo Development Framework, Hoo Highway Improvements and Future Hoo Environmental and infrastructure improvements on the Hoo Peninsula, via the Housing Infrastructure Fund, in accordance with advice in the Proposed Lower Thames Crossing Scoping Opinion (2017). Homes England and the Department for Levelling Up, Housing and Communities recently withdrew Housing Infrastructure Fund (HIF) support to Medway Council for development on the Hoo Peninsula because the proposals were not deliverable within the budget and timeframe of the HIF. Therefore, proposals reliant upon the HIF funding may no longer be delivered or be delayed in being delivered. The list of developments included in the inter-project effects assessment presented in ES Chapter 16: Cumulative Effects Assessment [**APP-154**] is different to the Uncertainty Log for the Project's transport model, as explained in paragraph 16.3.68 of ES Chapter 16.

Rep ID	WR Submitter	WR/Applicant's Response
		The Applicant has therefore had regard to the emerging proposals for the Hoo Peninsula where required, though as explained, in line with the appropriate methodologies, the plans do not meet the criteria for inclusion in the Transport Assessment. This does not indicate that the potential for future growth has been ignored. In addition, the impact of the Project in terms of reducing congestion and delays, improved journey time reliability, and cross-river connectivity would significantly aid the growth potential for local economies. The exclusion of the emerging proposals for the Hoo Peninsula from the Uncertainty Log would not undermine these benefits. One of the Scheme Objectives for the Project, developed by the Applicant and endorsed by the DfT, is to '*support sustainable local development and regional economic growth in the medium to long term*'. The Need for the Project [**APP-494**] (Chapter 5) demonstrates how this objective would be met by the Project. The benefits of the Project generally and in Medway specifically are also set out in Chapter 4 of the Planning Statement [**APP-495**] and Appendix D of the Combined Modelling and Appraisal Report [**APP-524**, **APP-525**, **APP-526** and **APP-527**]. Both Medway Council and Kent County Council acknowledge the Project is critical to addressing issues on the road network and supporting development in the area. The update to Kent County Council's Kent and Medway Growth and Infrastructure Framework (Kent County Council, 2018) provides a view of emerging development and infrastructure requirements to support growth across Kent and Medway. The Project is highlighted as a strategic priority to '*relieve congestion at Dartford, facilitate growth across the North Kent Thames Gateway area and create a new strategic route from the Port of Dover via the M2/A2 to the Midlands and North*' (paragraph 3.4.11 of the Need for the Project [**APP-494**]). In addition, Medway's Local Transport Plan (2011–2026) (Medway Council, 2011) acknowledges the role infrastructure proposals such as the Project would have in improving transport capacity and contributing to its priorities, specifically through providing a more reliable and efficient highway network, particularly for freight movements through Medway and beyond into neighbouring authorities (paragraph 3.4.17 of the Need for the Project [**APP-494**]).

REP1-425 Thames Crossing Action Group

Rep ID	WR Submitter	WR/Applicant's Response
REP1-425	Thames Crossing Action Group	**WR:** WR link: **REP1-425**
		Applicant's Response: **In response to the suggestion that none of the Scheme Objectives would be met:** The Scheme Objectives were agreed through extensive discussions with the Department for Transport (DfT) and outline what the Project should achieve. Need for the Project [**APP-494**] sets out how the identification, selection and design process has responded to the Scheme Objectives and how a collaborative engagement process has been used to inform the Project. The Project is expected to deliver a range of benefits including congestion relief at the Dartford Crossing. The improved connectivity across the River Thames and reduced journey times would help local businesses to boost productivity, supporting sustainable local development and regional economic growth. For more information about the Scheme Objectives and economic benefits, see Need for the Project [**APP-494**] and the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [**APP-526**]. **In response to the Dartford Crossing still being over design capacity, even if the proposed LTC goes ahead, so all the same issues associated with the congestion and pollution would remain:** To understand the performance of the Dartford Crossing, in scenarios with and without the Project (i.e. the Do Minimum and Do Something scenarios) the journey time benefits and the journey time reliability benefits provide the means to understand the changes in traffic flows arising from the proposed new road, and to assess whether the proposed new road would continue to provide relief to the Dartford Crossing into the future. The benefits arise from both a reduction in the total number of vehicles using the Dartford Crossing and from changes in the journeys and types of traffic using the crossing. This is set out in more detail in Section A.2 of Annex A of the Applicant's Summary of Oral Evidence and Post-Hearing Comments for Issue Specific Hearing 1 [**REP1-183**], submitted at Deadline 1. The Scheme Objectives are relieving the congested Dartford Crossing and its approach roads, improving their performance by providing free-flowing north–south capacity, improving the resilience of the River Thames crossings and the major road network, and improving safety.

Rep ID	WR Submitter	WR/Applicant's Response
		Chapter 5 of Need for the Project [**APP-494**] shows that the Project would reduce congestion at the Dartford Crossing and create additional capacity across the River Thames east of London. This additional connectivity would improve the ability for local traffic to cross the River Thames and would support sustainable development and economic growth, locally, regionally and nationally. It would help meet the demands of future traffic growth east of London as detailed in the Combined Modelling and Appraisal Report Appendix C – Transport Forecasting Package [**APP-522**] and the Combined Modelling and Appraisal Report Appendix D – Economic Appraisal Package: Economic Appraisal Report [**APP-526**]. Following construction of the Project there will be increased capacity across the River Thames, and the relief in congestion and new capacity will allow people to make different journeys, which will include some new journeys across the River Thames. Table 5.2 of Need for the Project [**APP-494**] sets out the changes in forecast daily traffic flows. It is forecast that the total number of trips across the River Thames on both the Dartford Crossing and the Project would increase by 32% in 2030, and 44% in 2045, compared to the Do Minimum scenario with just the Dartford Crossing. **In response to the predicted 50% increase in cross river traffic, from induced demand, if the proposed LTC goes ahead** The creation of new capacity on the road network will lead to changes in the way people travel. Some people will choose to make different journeys because shorter or less congested routes become available, and some people who would not previously have travelled will choose to make new journeys because the faster or shorter journey becomes more affordable. As a result, there will be changes in the lengths of journeys made, and in the total number of journeys made. The net increase in kilometres driven is highest in the PM peak hour, with an overall increase of 1.1% in 2030 and 1.23% in 2045. Further information is provided in Section A.3 New and longer trips, in Annex A of Post-event submissions, including written submission of oral comments, for ISH1 [**REP1-183**]. Following construction of the Project there will be increased capacity across the River Thames, and the relief in congestion and new capacity will allow people to make different journeys, which will include some new journeys across the River Thames. Table 5.2 of Need for the Project [**APP-494**] sets out the changes in forecast daily traffic flows. It is forecast that the total number of trips across the River Thames on both the Dartford Crossing and the Project would increase by 32% in 2030, and 44% in 2045, compared to the Do Minimum scenario with just the Dartford Crossing. **In response to rat running, detours and additional pressure on the existing road network:** The main considerations for connectivity with the surrounding road network are likely journey origins and

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destinations, physical and environmental constraints, compatibility of junction location and type, and suitability for use on an All-Purpose Trunk Road.

The desire to provide more local connections to and from the Project must be balanced against the need to ensure free-flowing connections with the strategic road network (SRN) and safety for all road users. Other considerations are increased traffic on local roads arising from additional connections and increased environmental effects associated with large junctions.

Where direct local connections are not provided, it is generally possible to connect to the Project by first joining roads on the SRN that are served by the proposed junctions.

Further information on the Project's connectivity with the surrounding road network is provided in Section 4.5.3 of Post-event submissions, including written submission of oral comments, for ISH1 [REP1-183].

With regards to detours, the Applicant recognises that some traffic will change the route by which it completes its journey once the Project opens, often to benefit from the improved cross river connectivity and traffic relief that the Project would bring on many sections of the road network as shown in the Traffic Forecasts Non-Technical Summary [APP-528]. However, the Applicant does not consider that this would represent a detour – in particular the Applicant notes that the Thames Crossing Action Group has concerns regarding traffic U-turning at the Manorway junction. There are forecast to be a small number of vehicles from the local area using the Orsett Cock junction and doing a U-turn at Manorway in order to access the Project. These numbers are shown for 2030 and 2045 in Table 1. The numbers are shown in PCUs, with each heavy goods vehicle (HGV) being 2.5 PCUs. These are vehicles who join the highway network from the A128 Brentwood Road at the Orsett Cock junction and wish to use the Lower Thames Crossing.

Table 1: Traffic U-turning at Manorway junction, PCUs
<table>
<tr><th>Year</th><th>AM peak hour</th><th>Inter peak average hour</th><th>PM peak hour</th></tr>
<tr><td>2030</td><td>40</td><td>13</td><td>29</td></tr>
<tr><td>2045</td><td>0</td><td>16</td><td>0</td></tr>
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The Applicant recognises that as a result of the Project opening, people will choose to make different journeys. In many places this will lead to beneficial impacts on the network, and in some cases will lead to adverse impacts. Overall, the benefits on the road network outweigh the adverse impacts, and this is reflected in the positive economic benefit of the Project. The Applicant has identified the adverse impacts on traffic flows across the local road network, and each of these impacts has been assessed and considered against the requirements set out in the
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Rep ID	WR Submitter	WR/Applicant's Response
		National Policy Statement for National Networks (NPSNN) (Department for Transport (DfT), 2014) in Appendix F of the Transport Assessment [**APP-535**]. The Applicant does not believe that the adverse impacts are unacceptable under this policy, and as such is not committing to any direct additional funding for interventions on the wider network through the draft Development Consent Order (DCO). The Applicant proposes to monitor the impacts of the Project on traffic on the local and strategic road networks as set out in the Wider Network Impacts Management and Monitoring Plan (WNIMMP) [**APP-545**]. If the monitoring identifies issues or opportunities related to the road network as a result of traffic growth or new third-party developments, then local authorities would be able to use this as evidence to support scheme development and case-making through existing funding mechanisms and processes. The traffic impact monitoring scheme is secured in Schedule 2 of the draft DCO [**REP1-042**] and would require approval by the Secretary of State, after consultation with relevant local highway and planning authorities, which would begin one year before the tunnel area opens. **In response to National Highways not planning for how traffic would migrate between the two crossings when there are incidents, and the adequacy for connections and the claims that the Project would cause 'chaos', congestion, pollution and an increase in the number of accidents:** Both Crossings will be managed by the Applicant, in accordance with standard National Highways Incident Management Processes (DMRB GM 703), in order to provide a co-ordinated response to incidents at either Crossing, including: • Managed through the Regional Operations Centre • Traffic Officer resources for both crossings • National management escalation structure for dealing with the response to different levels of incident • Communications resources for advanced warnings (Message signs, social media, press, radio, etc.) The Applicant works in partnership with key responders (Association of Ambulance Chief Executives, National Fire Chiefs Council and National Police Chiefs' Council) under the CLEAR agreement to minimise the impact of incidents on road users and the economy through an integrated, coordinated approach. The agreement sets out roles and responsibilities of the key organisations involved in traffic incident management on the strategic road network. The majority of incidents would be managed at a day-to-day operational level and would likely have a relatively minor effect on road users diverting between the Crossings. More complex incidents would be escalated to a Regional Response to enable strategic involvement for the planning of resources and resolution, press coverage and wider strategic signing.

Rep ID	WR Submitter	WR/Applicant's Response
		In most incident cases, even at Regional Response level, Dartford would continue to operate at ~50% capacity, meaning the remaining ~50% would need to be managed: • Traffic in the immediate vicinity of the Dartford Crossing would likely continue to use the Dartford Crossing. • Traffic on strategic routes towards the Crossing would be warned of the delays through (all currently existing): – Variable message signs (including journey time information and differential route information at strategic points) – Sat Nav/in-car systems – Traffic England website (incident descriptions, delay information and resolution estimates) – Press, radio, etc. – Social media • This will provide road users with journeys already underway to make early and informed decisions around the best choice of route for example: – Remain enroute to the Dartford Crossing – Divert to Lower Thames Crossing through an appropriate route (as early as possible) – Use alternative sections of the SRN if appropriate (e.g. M25) The use of media streams to alert people to the potential delays would also likely have the effect of temporarily reducing the number of people attempting to make a crossing, therefore temporarily reducing the overall demand (as demonstrated by the protests on the QEII Bridge in 2022). In relation to accidents, information on accidents is provided in Chapter 9 of the Transport Assessment [**APP-529**]. Over the study area as a whole there is predicted to be a decrease in the number of accidents per vehicle kilometre driven, but due to the increase in the total number of vehicle kilometres driven as a result of the Project there is predicted to be an overall increase in the number of accidents. The Applicant has reported that there would be an increase of 2,672 casualties in the first 60 years after opening, of which 2,464 would be classified as slight, 182 as serious and 26 as fatal. These casualties are assessed across a wide area, as area set out in Plate 9.1 of the Transport Assessment [**APP-529**]. **In response to LTC being a 'Smart' Motorway by stealth, adding further safety fears and risk and coded as a motorway:**

Rep ID	WR Submitter	WR/Applicant's Response
		Safety is the Applicant's highest priority. The design of the A122 seeks to further enhance safety, beyond that of conventional All Purpose Trunk Roads (APTRs), through addition of technology services and features to better support the road user. APTRs have been in existence for many years and are used regularly by the public. Like other ATPRs, the A122 will typically have 1m nearside and offside hard strips and no hard shoulder. Therefore, the appropriate design and operation for the A122 is that of an APTR with enhanced safety and operational features. The key design philosophy is that A122 is an APTR, not a motorway or ALR motorway. The operation of APTRs without hard shoulders is not a recent development. There are many hundreds of miles of APTR, without hard shoulder, currently in operation across the country which are used by millions of road users each year. These are not smart motorways. Whilst there are many facets involved in determining the design and operating regime for a road, key factors for the A122 are as follows: a. User safety. b. The A122 is new build and not a conversion of an existing road. c. Purpose of route and route consistency, taking into account the interfaces that the A122 has with APTRs (A2, A13, A1089), M25 and the local road network. d. Operation of the road tunnel. The Applicant has set out in detail how the claim that the proposed A122 Lower Thames Crossing is a smart motorway is inaccurate in design, legal and factual terms in its [REP1-196] submission at Deadline 1. The Department for Transport confirmed that the road is designed in accordance with All Purpose Trunk Roads standards in response to TCAG (in a letter which has been appended by the Applicant in the aforementioned document for transparency and so the Examining Authority has comfort that the suggestion the Project is a smart motorway has no credence insofar as Government is concerned. The reason for coding the Project as a motorway is provided in paragraph 6.2.3 of Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [**APP-522**]. When a link is coded into the Saturn software information is provided on the distance of the link and the capacity of the link. The capacity is affected by a number of factors, such as the road type, number of lanes, the width of the lanes, the gradient of the road and the mixture of traffic using the road. Given the prohibition of slow-moving vehicles from the Project, its mainline links were coded with the capacities and speed flow curves used to describe motorway links rather than the coding for an APTR. As the forecast volume of traffic on the mainline of the Project is well below the theoretical capacity of the links, the coding of the links in this way would make no discernible difference to the forecast traffic flows and times along the Project. Nor does coding it in this way affect the clear design, legal and safety features of the Project as an APTR.

Rep ID	WR Submitter	WR/Applicant's Response
		When calibrating the coding of links in a Saturn highway model that already exist on the ground, the capacity and other characteristics of the road used in the coding of that road in the model is checked against the observed traffic characteristics on that road. During the calibration process, as reported in paragraph 5.5.2 of Combined Modelling and Appraisal Report Appendix B: Transport Model Package [**APP-520**], the A2 eastbound between the M25 and M2 junction 1 was coded using a motorway capacity, as this matched the observed use of the road. This section of the A2 is adjacent to the Project. **In response to concerns about accidents:** Information on accidents is provided in Chapter 9 of the Transport Assessment [**APP-529**]. Over the study area as a whole there is predicted to be a decrease in the number of accidents per vehicle kilometre driven, but due to the increase in the total number of vehicle kilometres driven as a result of the Project there is predicted to be an overall increase in the number of accidents. The Applicant has reported that there would be an increase of 2,672 casualties in the first 60 years after opening, of which 2,464 would be classified as slight, 182 as serious and 26 as fatal. These casualties are assessed across a wide area, as area set out in Plate 9.1 of the Transport Assessment [**APP-529**]. The health outcome for affected communities/sensitive populations as a result of changes in road safety during operation of the Project are assessed as neutral, as set out in Section 7.7 of the Health and Equalities Impact Assessment [**APP-539**]. **In response to Unexploded Ordnance:** ES Appendix 10.10: Unexplored Ordnance (UXO) Desk Study and Risk Assessment [**APP-433**] provides a detailed assessment of the Project area and was produced according to industry best practice and guidance. The Applicant has and will continue to act on its findings and recommendations, with responsibilities passed on to its appointed Contractors as appropriate. That assessment concludes that the overwhelming majority of Unexploded Ordinance poses a "low risk", and that there are no examples of any "high" or "very high" risks identified. That assessment makes a number of recommendations for the limited areas which are identified as a "moderate risk". This, in turn, is secured by paragraph 6.11 of the Code of Construction Practice which requires (1) "pre-construction risk assessments to determine the possibility of finding unexploded ordnance within the construction area. An emergency response procedure will be prepared and implemented by the Contractors to respond to the discovery of unexploded ordnance. This will include notifications to the relevant local authorities and emergency services" and (2) requires "with the recommendations of the Appendix 10.10: Unexploded Ordnance Desk Study and Risk Assessment (Application Document 6.3)".

Rep ID	WR Submitter	WR/Applicant's Response
		The safety of residents, road users and staff working on the construction and operation of the Project is a core priority, as represented in the Scheme Objectives. **In response to air quality and the failure to meet legal targets for PM2.5:** The targets for particulate matter where particles are less than 2.5 micrometres in diameter (PM2.5) as set out in the Environment Act 2021 and the Environment Improvement plan, were enacted following the submission of the DCO application, as part of The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (ETR) on 30 January 2023. The interim target for PM2.5 is 12.5µg/m³ and a legal target is 10µg/m³. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 are clear that the legal target will only be measured and assessed at monitoring stations (such as Defra Automatic Urban Rural Network (AURN) monitoring network). There is only one AURN station that monitors PM2.5 within 200m of the affected road network, in central Grays. The other closest monitors are more than 200m away from the affected road network: • At Stanford-Le-Hope adjacent to the A1014. • At Chatham adjacent to the A2. The 12µg/m³ interim PM2.5 target set in the UK Governments Environmental Improvement plan are likely to be determined in the same way as the legal PM2.5 target (i.e. at AURN monitoring stations). The Applicant has analysed the latest air quality monitoring data from the AURN Network and it should be noted that for 2022, the interim PM2.5 target was achieved across the entire AURN monitoring network in England (which includes more than 80 monitoring stations). The monitoring station in Grays has been operational for a relatively short time, starting monitoring PM2.5 in 2023, and so there is currently not enough data to determine compliance. It is located in an area that the modelling predicts an improvement in air quality as result of the Project. Across the country as a whole, six monitoring stations monitored PM2.5 concentrations which currently are greater than the 2040 legal target of 10µg/m³, but only by a small margin (maximum annual mean 12µg/m³), including the stations at Stanford-le-Hope and Chatham. None exceed the 2028 improvement target of 12µg/m³. PM2.5 concentrations are expected to decline in the future in response to ongoing actions undertaken by UK government and local authorities to reduce emissions, and so it is likely monitored concentrations would be lower by the legal target compliance date of 2040. It is therefore considered unlikely that the Project would impact on achievement of the PM2.5 targets. Beyond the regulations set out above, there is currently no guidance from Defra on how the targets should be considered in the planning process.

Rep ID	WR Submitter	WR/Applicant's Response
		The air quality assessment reported in Environmental Statement (ES) Chapter 5: Air Quality [**APP-143**] showed that the Project would comply with the current legal thresholds for PM2.5. Air quality modelling confirmed that there would be no exceedances of the annual mean PM2.5 AQS objective of 25µg/m^3 and the annual mean PM2.5 The Applicant understands that there are sensitive populations within local communities such as people with pre-existing respiratory health conditions. Section 7.8: Air Quality of the Health and Equalities Impact Assessment [**APP-539**] assesses the likely effects of air quality on health and wellbeing as a result of the Project on both general and sensitive populations. The Applicant is undertaking an Air Quality Quantitative Health Impact Assessment which will be submitted to the examination. **In response to the impact on health and well-being:** A Health and Equalities Impact Assessment (HEqIA) [**APP-539**] has been prepared, which considers the health impacts on local people and communities, including those protected by equality legislation, such as children and older people, during the construction and operation of the Project. Detailed information about the air quality impacts of the Project in the assessed local areas is presented in ES Chapter 5: Air Quality [**APP-143**]. The assessment methodology sets out the locations where air quality modelling was carried out and why these sites were selected. The assessment predicts that there would be areas where air quality is likely to improve and areas where air quality is likely to worsen as a result of the Project. Overall, the Project is not expected to result in significant adverse impacts on air quality in relation to human health when considering national and European air quality target levels, and the Design Manual for Roads and Bridges. Given that there would be no significant adverse impacts on air quality in relation to human health from the Project during operation, no mitigation for air quality effects is required. ***In response to the Project causing harm and destruction to the environment and people:*** ES Chapter 1: Introduction [**APP-139**] summarises the key national and local policy documents relevant to the environmental assessment of the Project. The relevant policies within these plans are further discussed in Chapter 7 of the Planning Statement [**APP-495**] and in Planning Statement Appendix C [**APP-498**]. In addition, each chapter of the ES identifies the relevant legislation and policy in a separate appendix. ES Chapter 3 of Need for the Project [**APP-494**] identifies the strategic need for the Project in national, regional and local level policy documents. Chapter 6 of the Planning Statement [**APP-495**] assesses the potential benefits and adverse effects of both the construction and operation of the Project to demonstrate accordance with National Policy Statements (NPSs) for

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		National Networks and Energy. Chapter 7 gives consideration to a number of 'other matters' including the NPS for Ports, the National Planning Policy Framework and local development plan policy. Chapter 8 of the Planning Statement [**APP-495**] describes the planning balance, which weighs in detail the adverse impacts against the benefits of the Project. It concludes at paragraph 8.7.34 that: '*In light of all of the above, it is the Applicant's view that there is a clear, overriding and compelling case in the public interest for the Project. Accordingly, the policy presumption in favour of the Project and the overall planning balance lie strongly in favour of the grant of development consent.*' Information on how the Applicant would reduce impacts on local communities, properties and homes can be found in the Code of Construction Practice [**REP1-157**], as well as the ES topic chapters, in particular ES Chapter 5: Air Quality [**APP-143**], ES Chapter 12: Noise and Vibration [**APP-150**] and ES Chapter 13: Population and Human Health [**APP-151**]. ES Chapter 8: Terrestrial Biodiversity [**APP-146**] includes an assessment of designated areas, including Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI) and local wildlife sites including Low Street Pit, Blackshots Nature Reserve, Mucking Heath, Rainbow Wood Shaw and Canal and Grazing Marsh Higham Local Wildlife Sites. The Planning Statement (Section 6.5) [**APP-495**] provides an assessment of the Project against relevant policy relating to SSSIs and demonstrates that the need and benefits of the Project outweigh moderate adverse harm identified in the ES. The Planning Statement also provides an assessment of effects on Local Wildlife Sites and notes that the Project has sought to minimise impacts where possible and provide compensation for losses to seek to retain the function of these sites as far as practicable. A Habitats Regulations Assessment (HRA) [**APP-487**] has also been carried out to identify any likely significant effects of the Project on European designated sites, including the protected areas in and around the Thames Estuary. Habitat functionality enhancement measures to reduce the effects of land take and disturbance on the Thames Estuary and Marshes Special Protection Area and Ramsar site are described in paragraphs 7.1.21 to 7.1.37 of the HRA [**APP-487**]. This report also demonstrates the suitability of proposed mitigation for effects on European sites (Section 7). The impacts on biodiversity are documented in ES Chapter 8: Terrestrial Biodiversity [**APP-146**] which provides an assessment of the impacts on sensitive flora and fauna as a result of the construction and operation of the Project. It includes assessments of habitat loss and potential species mortality, as well as how changes to factors such as

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		noise and vibration, lighting, air quality and hydrological conditions could affect the species and habitats present within the Project's Zone of Influence (ZoI). Regarding concerns on habitat loss and fragmentation, the Project would result in the loss of predominantly arable land, together with some semi-natural habitat, but would offset these losses through the creation of more semi-natural habitats that would, in the long term, offer high quality habitat on a landscape scale. The Project would also create seven green bridges across the road to mitigate fragmentation impacts. Details of habitat loss and creation south and north of the River Thames are given in Table 8.31 and Table 8.35 respectively within ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. **In response to the loss of green belt:** The Applicant is content that the implications of the Project on Green Belt in policy terms have been considered appropriately in the Planning Statement and that the Project demonstrates Very Special Circumstances that clearly outweigh both definitional and actual harm when compared to such alternatives. The Planning Statement [**APP-495**] and Planning Statement Appendix E: Green Belt [**APP-500**] addresses the effects of the Project on the Green Belt from a policy perspective. ES Chapter 7: Landscape and Visual [**APP-145**] considers the effects of the Project on the landscape including relevant landscape designations. **With regard to the loss of ancient woodland:** ES Chapter 8: Terrestrial Biodiversity [**APP-146**] presents the Applicant's assessment as to how the Project's construction would impact species and habitats, including ancient woodland. Section 8.5 sets out the proposed mitigation and compensation measures to reduce or offset the impacts, while Section 8.6 presents the residual impacts. The Applicant recognises the irreplaceable nature of ancient woodland and veteran trees. Impacts upon ancient woodland and veteran trees have (amongst other environmental impacts) been considered throughout the route options selection process, and the Project's impacts on these areas have been reduced through its design, while still achieving the Scheme Objectives, as set out in Need for the Project [**APP-494**]. This design is reported within the Planning Statement [**APP-495**], specifically Chapter 5: Project evolution and alternatives, and Chapter 8: Planning balance and conclusions. The Project would result in the direct the loss of 5.35ha of ancient woodland south of the River Thames, and 1.57ha north of the River Thames; a total of 6.92ha. Where these impacts on ancient woodland cannot be avoided, compensatory woodland planting is proposed to offset the impacts. While ancient woodland cannot be replaced, new woodland planting would be designed to strengthen connectivity between existing retained woodland areas, particularly around Shorne and Ashenbank

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		Woods SSSI, Claylane Wood, Great Crabbles Wood SSSI and Jeskyns Community Woodland to the south of the A2/M2. North of the River Thames, ancient woodland compensation planting is primarily proposed around Folkes Lane and Hole Farm with some immediately adjacent to Rainbow Wood Shaw. This would build resilience into the wider network of designated sites and habitats and support a large number of species. ES Figure 8.33 [**APP-294**] shows the locations of ancient woodland impacts and compensation planting areas. The national need and benefits which would be delivered by the Project clearly outweigh the loss of ancient woodland and veteran trees, as per the policy test at NPSNN paragraph 5.32. Specific ancient woodland compensatory planting proposed by the Project totals 48.75ha south of the River Thames and 32.00ha north of the River Thames: a total of 80.75ha. Further details of this habitat creation are provided in ES Figure 2.4: Environmental Masterplan [**APP-159 to APP-168**], the Design Principles [**APP-516**], and the outline Landscape and Ecology Management Plan [**REP1-173**]. **In response to AONB impacts:** During construction, there would be temporary adverse effects on the landscape character of the Kent Downs Area of Outstanding Natural Beauty (AONB) and on the landscape character in the Green Belt, along with temporary adverse visual effects on users of recreational facilities, residents and people travelling through the study area. During operation, there would be permanent adverse effects on the landscape character of the Kent Downs AONB and on the Green Belt and permanent adverse effects on users of recreational facilities, residents and people travelling through the study area. These effects would reduce by the design year (15 years after opening year) as planting mitigation matures. Section 7.5 of ES Chapter 7: Landscape and Visual [**APP-145**] sets out the proposed mitigation to reduce the landscape and visual impacts to what the Applicant considers acceptable levels, given the requirements and benefits of the Project. It is demonstrated in Chapter 8 of the Planning Statement [**APP-495**] that the need for the Project and the benefits it would deliver outweigh the landscape and other impacts and so accord with the requirements of relevant NPSs and other policy. **In response to the ecology surveys being out of date:** All the required surveys have been undertaken to develop an ecological baseline against which the assessment of likely significant effects has been completed. Any limitations around extent of surveys and divergence from best practice have been detailed within the relevant technical appendices supporting the DCO application. **In response to green bridges:**

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		Biodiversity connectivity would be maintained by crossings of the Project by seven mixed-use green bridges. Green bridges have been individually designed to provide the greatest benefit at each particular crossing location, with reference given to the Landscape Institute Technical Note for Green Bridges (Landscape Institute, 2015). Various sites have been identified by the Project as being required for essential ecological mitigation to address a number of adverse effects on terrestrial biodiversity, as identified in ES Chapter 8: Terrestrial Biodiversity [**APP-146**]. Mitigation measures include the creation of significant areas of habitat (woodland planting; creation of open mosaic habitat; wetland habitats), and locations to create new or strengthen existing links between habitats, benefiting biodiversity by building resilience into the wider habitat networks across the landscape. In respect of the green bridge at Thong Lane South, this would provide a new habitat connection where it is currently absent due to the existing transport corridors of the A2 and HS1. Thong Lane North green bridge would be designed to extend the character of the well-vegetated Thong Lane and to connect woodland to the east and west to provide a habitat corridor for mammals. This connectivity between habitats adjacent to and within the green bridges would facilitate movement of a range of species across them. The provision of green bridges is a benefit as a result of the Project, and is reported in ES Chapter 8: Terrestrial Biodiversity [**APP-146**] at paragraph 8.5.8, and in the outline Landscape and Ecology Management Plan [**REP1-173**] at paragraph 5.6.6. **In response to the loss of agricultural land:** The NPSNN and NPS EN-1 set out that Applicants should recognise the importance of the Best and Most Versatile (BMV) (Grades 1, 2 and 3a) land and to prioritise the use of areas of poorer quality. To address the policies in the NPSNN and NPS EN-1, ES Chapter 10: Geology and Soils [**APP-148**] presents an assessment of likely significant effects on soil resources and BMV land. ES Appendix 10.4: Agricultural Land Classification Factual Report [**APP425**] presents the outputs of the survey and has informed the baseline of ES Chapter 10. Land considered to be BMV agricultural land makes up approximately 55% of the land needed for the Project to the south of the River Thames and approximately 25% to the north. It should be noted, however, that over half of the BMV land within the Order Limits is within the lowest BMV land category (Grade 3a), with only a very small proportion (approximately 3%) within the highest BMV land category (Grade 1). This is set out in paragraphs 6.5.278 to 6.5.288 of the Planning Statement [**APP-495**]. The Applicant has taken reasonable and practicable steps to minimise and mitigate for the likely significant effects. The design has been optimised to minimise the land take required to construct and operate the Project. The route

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		optioneering phase and design development considered the presence of higher-quality agricultural land alongside other environmental and design constraints. Where agricultural land cannot be avoided, soil management measures to minimise the adverse effects of soil disturbance and handling during the construction phase are described in ES Chapter 10: Geology and Soils [**APP-148**] and secured through their inclusion in the Register of Environmental Actions and Commitments, which forms part of ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. In ES Chapter 13: Population and Human Health [**APP-151**], the Applicant assesses the impact of the Project on agricultural landholdings. Agricultural land is affected at the point it is taken out of agricultural use, namely at the start of the construction phase. ES Chapter 13 [**APP-151**] identifies significant adverse effects in relation to a number of landholdings to the south and north of the River Thames. **In response to the failure to meet new legal requirements for Biodiversity Net Gain:** The Project has been designed to maximise benefits to biodiversity primarily through the creation of new areas of high quality semi-natural habitat which will be managed appropriately in perpetuity and have been designed to create new and strengthen existing ecological networks, increasing their resilience to future pressures such as climate change. The habitat creation proposed for essential mitigation are appropriate to the adverse effects likely to occur during the Project's construction and operation and are ambitious in terms of the objectives to create high quality habitat. This has been the overarching approach to mitigation design, rather than looking to generate the highest biodiversity metric score possible within the Project's Order Limits. It should also be recognised that mandated biodiversity net gain requirements for Nationally Significant Infrastructure Projects would only apply where the application is made in 2025 or afterwards, and therefore will not apply to the Project. The environmental mitigation and compensation figures relating to terrestrial biodiversity, together with any assumptions associated with those, are clearly set out in ES Chapter 8: Terrestrial Biodiversity [**APP-146**] and ES Appendix 8.21: Biodiversity Metric Calculations [**APP-417**]. **In response to non-compliance with Net Zero legislation:** Opportunities taken to reduce carbon emissions are discussed in the Carbon and Energy Management Plan [**APP-552**] and ES Chapter 15: Climate [**APP-153**]. It is also addressed in Planning Statement Appendix I: Carbon Strategy and Policy Alignment [**APP-504**], which sets out the low-carbon innovation and approaches that would be used in the Project to explore how the Applicant can reach its target of achieving carbon-neutral construction by 2040 and help the UK reach net zero by 2050. Appendix I explains how the Project represents a step-change in approach for a road project of this scale, in terms of the scope and nature of the measures that the Applicant is committing to deliver to reduce emissions during the Project's construction and operation. Together with the policies

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		which the Government has set out in its Decarbonising Transport Plan (DfT, 2021a), these measures ensure that the Project is aligned with a trajectory to net zero and that the Project's emissions would not therefore be significant, in accordance with relevant guidance. The Project would not prevent the move to a low-carbon economy. The Government's Transport Decarbonisation Plan sets out the approach to be adopted to deliver 'net zero'. This requires electrification of private vehicles and the development of an alternative fuel approach for Heavy Goods Vehicles (HGVs), such as hydrogen, battery and/or overhead gantries. Any new technologies brought forward to achieve these goals will need to be compatible with the existing road network and, therefore, with the Project's design, which conforms to the latest standards. A second iteration of the Carbon and Energy Management Plan [**APP-552**] would be used to demonstrate the implementation of the carbon commitments secured through the DCO during the construction phase and would set out the ways in which appointed Contractors would demonstrate that carbon emissions are kept within the defined limits. The Project has a commitment to implement the PAS2080 'Carbon Management in Infrastructure' standard, and each Contractor's plan would be refreshed annually to demonstrate it remains consistent with emerging best practice and aligned with their emissions pathway. The Applicant is employing new technologies and practices to make the Project a 'pathfinder' for low-carbon construction, which means (paragraph 1.1.3 of the Carbon and Energy Management Plan): • Constructing the Project for the lowest practicable carbon emissions • Testing low-carbon innovation and approaches • Leaving a legacy that enables future projects to decarbonise, in line with the Applicant's ambition for net zero construction emissions by 2040 **In response to concerns about flood risk and that the proposed route is across flood plains:** The Applicant's proposals have been designed in accordance with the NPSNN and the relevant provisions of the National Planning Policy Framework. This includes Government policy on development and flood risk. The Project has been subject to a detailed Flood Risk Assessment (FRA) that has demonstrated that the Project would not increase flood risk, with the exception of some predesignated areas known as Compensatory Flood Storage Areas. In these areas, the land would be lowered to accommodate any flood water displaced by the Project, including in the Mardyke floodplain associated with construction of the viaduct and approach embankments, as detailed in Part 4 of ES Appendix 14.6: Flood Risk Assessment [**APP-463**]. The FRA and modelling informing has been reviewed and approved by the Environment Agency.

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		In response to the adequacy of the proposed environmental mitigation and compensation: The Project has been designed to maximise benefits to biodiversity primarily through the creation of new areas of high quality semi-natural habitat which will be managed appropriately in perpetuity and have been designed to create new and strengthen existing ecological networks, increasing their resilience to future pressures such as climate change. The habitat creation proposed for essential mitigation are appropriate to the adverse effects likely to occur during the Project's construction and operation and are ambitious in terms of the objectives to create high quality habitat. This has been the overarching approach to mitigation design, rather than looking to generate the highest biodiversity metric score possible within the Project's Order Limits. It should also be recognised that mandated biodiversity net gain requirements for Nationally Significant Infrastructure Projects would only apply where the application is made in 2025 or afterwards, and therefore will not apply to the Project. The environmental mitigation and compensation figures relating to terrestrial biodiversity, together with any assumptions associated with those, are clearly set out in ES Chapter 8: Terrestrial Biodiversity [**APP-146**] and ES Appendix 8.21: Biodiversity Metric Calculations [**APP-417**]. Actions have been taken when developing the Project to avoid and minimise negative social and environmental impacts through careful design, including embedded mitigation secured under Requirement 3 of the draft DCO [**REP1-042**] and essential mitigation under the Register of Environmental Actions and Commitments, which forms part of ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. The Control Plan, Plate 2.1 in the outline Landscape and Ecology Management Plan (oLEMP) [**REP1-173**], sets out how all the requirements in Schedule 2 of the draft DCO [**REP1-042**] and control documents work together to manage the delivery of the Project in accordance with the application. Further controls are set out elsewhere in the Code of Construction Practice [**REP1-157**], in the outline Traffic Management Plan for Construction [**REP1-174**] and in the Stakeholder Actions and Commitments Register [**REP1-176**]. The Project alignment was chosen to balance air quality, noise and visual effects, avoid heritage assets, and avoid impacts to the Thames Estuary and Marshes Ramsar site and Thames Estuary and Marshes Special Protection Area. Further refinements resulted in the provision of environmental mitigation, compensation and enhancement measures, such as habitat creation, landscaping and Public Rights of Way, the narrowing of the M2/A2 corridor through the Kent Downs AONB and Shorne Woods Country Park, the provision of new planting and green bridges, and the introduction of nitrogen deposition compensation sites within the Order Limits. Development of the Project's design is set out in the Project Design Report [**APP-506** to **APP-515**]. Where it has not been possible to mitigate impacts, compensatory measures are proposed. However, it is noted that there would be residual adverse impacts.

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		The relevant planning policy principles are assessed in Chapter 6 and Appendix A of the Planning Statement [**APP-495 and APP-496**], which demonstrates accordance with, for example, paragraph 3.3 of the NPSNN. Local planning policies are assessed in Chapter 7 and Appendix C of the Planning Statement [**APP-495 and APP-498**]. An Environmental Impact Assessment (EIA) of the Project assesses its likely significant environmental effects and presents the proposed mitigation, including the measures referred to above. The residual significant environmental effects of the Project (following mitigation) are identified in each topic chapter in the ES and summarised in ES Chapter 17: Summary [**APP-155**]. Chapter 6 of the Planning Statement [**APP-495**] provides an assessment of the potential adverse effects of the Project set against the assessment principles and generic impacts assessment in the NPSNN, the relevant Energy NPSs, and other national and local policy where relevant. **In response to construction concerns and the impact on communities along and surrounding the entire proposed route:** Air quality effects from construction vehicle exhaust emissions and as a result of the anticipated redistribution of traffic during the construction phase have been considered in accordance with Design Manual for Roads and Bridges LA 105 Air Quality (Highways England, 2019) and are described in ES Chapter 5: Air Quality [**APP-143**]. The air quality assessment covered the duration of the construction period, with each year during the construction programme modelled to ascertain whether there were any significant effects. The assessment concludes that the temporary change in exhaust emissions of nitrogen dioxide (NO2) and particulate matter (PM10 and PM2.5) at human receptors would not lead to a significant effect on local air quality. Construction phase air quality impacts also have the potential to arise, if unmitigated, as a result of emissions of construction dust and emissions from non-road mobile machinery. However, with the implementation of the mitigation measures outlined in the Register of Environmental Actions and Commitments within ES Appendix 2.2: Code of Construction Practice [**REP1-157**], there are anticipated to be no significant air quality effects during construction, which is consistent with the overall conclusions of the Project-wide air quality effects during the construction phase reported in ES Chapter 5: Air Quality [**APP-143**]. Section 8.9 of the Transport Assessment (TA) [**APP-529**], outlines the forecast impacts on public transport during the construction period. Mitigation is proposed as part of the DCO in a number of documents, including in the outline Traffic Management Plan for Construction [**REP1-174**] which details the mechanisms which would be in place to allow for discussions to take place on matters such as appropriate mitigation for public transport impacts during construction.

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		The Applicant is working with all residents and businesses (including farms) that are or would be directly affected by the Project to minimise the impacts and to understand their access needs. The Applicant would expect to maintain accesses throughout construction. If there were any impacts, the Applicant would engage with affected parties and, where possible, give them advance notice about any temporary impacts on their access, However, in the case of an emergency (such as a burst pipe) the Applicant would work to neutralise any harmful impacts immediately for the benefit of all parties, even if this meant temporarily closing an access. The Applicant would provide regular communication and advance notice of activities during the construction period. Paragraph 5.3.2 of ES Appendix 2.2: Code of Construction Practice [**REP1-157**] states that, at least two weeks before planned works are carried out, information sheets relating to the programmed activities would be distributed. The information sheets would detail the expected disruptions and measures being taken to avoid, minimise or mitigate the adverse impacts of these works. A community liaison group (CLG) would be established in communities likely to be most impacted during construction and CLGs would be invited to attend the Traffic Management Forum (TMF); further details are set out in ES Appendix 2.2: Code of Construction Practice [**REP1-157**] paragraphs 5.2.11 to 5.2.15 and the oTMPfC paragraphs 3.3.15 to 3.3.19 [**REP1-174**] provides further details relating to the TMF. **In response to the adequacy of the consideration of alternatives, better and more sustainable alternatives and public transport provision:** As required by the NPSNN (paragraphs 3.3, 4.11, 4.26, 4.2), the early development of the Lower Thames Crossing involved a detailed options appraisal. Between 2009 and 2017 a series of corridors were considered, and narrowed down into defined potential routes through a process of study and consultation. This process is set out in the Planning Statement Chapter 5: Project Evolution and Alternatives [**APP-495**] (Section 5.4) and in ES Chapter 3: Assessment of Reasonable Alternatives [**APP-141**] (Sections 3.7, 3.8 and 3.9). The 2016 route options consultation contained information about why Location C was being pursued instead of Location A. This was a matter consultees were able to comment on, and indeed did so, leading to the preparation of a further assessment to support the decision. Further assessment on Location A (route 1) was undertaken following the close of the 2016 consultation. The Secretary of State set out the preferred route at Location C in 2017, and the basis for not selecting Location A (and specifically Route 1) were provided in Section 3.2 of the Post Consultation Scheme Assessment Report Volume 7 (Highways England, 2017). Consideration of the role other transport modes, including rail, might play in addressing congestion at the Dartford Crossing is set out in Section 5.3 of the Planning Statement [**APP-495**].

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		The Applicant has considered a range of options during the development of the Project to provide improved cross-river provision for walkers and cyclists. The options investigated include using the tunnel, upgrading the existing ferry, relocating the ferry, building a separate bridge or cable car, and providing a shuttle service through the tunnel. These options were not taken forward for a variety of reasons including technical feasibility, operational issues, lack of commercial viability, cost, environmental impacts, and poor safety. Latent demand for walking and cycling across the River Thames at the Project crossing point is low and therefore unlikely to unlock enough trips to make the required infrastructure for a dedicated shuttle service economically viable. Page 48 of the Project Design Report Part G: Design Evolution [**APP-514**] provides further information. In addition, Chapter 5 of the Planning Statement [**APP-495**] provides an overview of the assessment undertaken on alternative modes of transport. The Project would create opportunities for public transport operators to develop new local and regional bus services, by providing new connectivity between Kent, Thurrock and Essex. Identification and development of these routes is the responsibility of the relevant operators. Local buses will not have to pay the user charge for the Lower Thames Crossing, reducing operating costs for operators as is set out in Section 2.2 of the Road User Charging Statement [**APP-517**]. **With regard to not adequately considering rail alternatives:** The Lower Thames Crossing would not prevent such an improvement to the rail freight network being provided should the DfT or Network Rail consider such infrastructure is required and feasible to reduce road-based transportation of freight. However, it should be noted that improvement to the rail freight network between Ashford and Reading does not currently form part of either the DfT or Network Rail's plans to increase capacity of the rail freight network, nor is the Applicant aware of any published assessment of the benefit, feasibly or cost of providing such infrastructure. Further consideration of rail alternatives is provided in Section B.2 of Annex B of the Applicant's Summary of Oral Evidence and Post-Hearing Comments for Issue Specific Hearing 1, (**REP1-183**). **In response to regional economic growth and more traffic negatively impacting the economy and poor value for money:** The Project has a series of Scheme Objectives which are set out in Need for the Project [**APP-494**]. One of these is to "*To support sustainable local development and regional economic growth in the medium to long term*". Section 5.6 sets out how the Project supports the Scheme Objectives.

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		Achieving value for money is one of the Scheme Objectives and a Value for Money (VfM) assessment has been carried out. As detailed in Need for the Project [APP-494] it represents positive value for money as the substantial benefits of the Project outweigh the costs. Chapter 5 of Need for the Project [APP-494] shows that the Project would reduce congestion at the Dartford Crossing and create additional capacity across the River Thames east of London. This additional connectivity would improve the ability for local traffic to cross the River Thames and would support sustainable development and economic growth, locally, regionally and nationally. It would help meet the demands of future traffic growth east of London as detailed in the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522] and the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526]. See further comments on the BCR below. ***In response to the rise in costs:*** The Applicant has presented its economic appraisal of the Project within the Combined Modelling and Appraisal Report [APP-518], and in more detail in the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526] and the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Level 3 Wider Economic Impacts Report [APP-527]. The forecast cost of the Project used within the economic appraisal is set out in Table 4.4 of the Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report. This cost (£8,083m) was assured by National Highways in February 2022 (see paragraph 6.2.3 of the same document). **In response to the adjusted BCR dropping, value for money, the adequacy of assessment, updating costings and including all LTC related costs:** The Benefit Cost Ratio (BCR) reflects the value of benefits and costs at the time at which it is produced. Many factors that affect the costs and benefits of the Project change over time, partly due to a growing maturity in the design of the Project and changes in the value of benefits. During recent years for example, DfT has changed the value of time savings and the rate of growth of the value of those time savings over time. The BCR of 3.1 dates from the Summary Business Case produced in support of the 2016 route options consultation, and is now seven years old and reflects a scheme at a lower level of maturity. The BCR of 0.48 is only based on the outcome of the Level 1 appraisal, which includes all of the costs and only some of the benefits. The value for money assessment for a scheme under DfT TAG guidance considers the BCR figure that includes the Level 1 and Level 2 benefits. Section 1.4 of Combined Modelling and Appraisal Report Appendix D: Economic Appraisal Package: Economic Appraisal Report [APP-526] provides details of how the published central case BCR of 1.22 is derived. That document also confirms that 100-year appraisal period

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		sensitivity tests have been undertaken which show that the Adjusted BCR increases to between 1.66 and 1.72 depending on the assumptions relating to the implementation of the Transport Decarbonisation Plan. The wider economic impacts costs associated with the Project have been appraised following TAG guidance. If additional transport schemes, outside the scope of the DCO application, are proposed in future their appraisals would include an assessment of both the benefits and costs of such a proposal. It is not necessarily the case that a combined BCR of the Project and any combination of those schemes would be lower than the BCR of the Project alone, as this is dependent on whether the benefits included in the BCR calculation for a particular set of schemes outweigh the costs or not. **In response to there being a false economy whereby other works that would be needed as a direct result of LTC are not being included in the LTC project/budget, e.g. Tilbury Link Road and Rest and Service Areas:** The Applicant recognises that, as a result of the Project opening, some people would choose to make different journeys. In many places on the network this would lead to beneficial impacts on the network, and in some cases lead to adverse impacts. Overall, the transport benefits of the Project clearly and significantly outweigh the negative impacts on the road network, with the Project fulfilling the Scheme Objective to relieve the congested Dartford Crossing and approach roads, improving their performance by providing additional free-flowing north–south capacity across the River Thames. For more information about the Scheme Objectives, see Need for the Project [**APP-494**]. While there would be negative impacts on traffic flow in some locations, the Applicant considers that no additional interventions are necessary beyond the proposals presented in the application for development consent. For more information about the impacts on the strategic road network and local roads, see the Traffic Forecasts Non-Technical Summary [**APP-528**]. The Applicant proposes to monitor the impacts of the Project on traffic on the local and strategic road networks as set out in the Wider Network Impacts Management and Monitoring Plan (WNIMMP) [**APP-545**]. If the monitoring identifies issues or opportunities related to the road network as a result of traffic growth or new third-party developments, then local authorities would be able to use this as evidence to support scheme development and case-making through existing funding mechanisms and processes. The Applicant submitted an updated WNIMMP [**APP-545**] following consultation on the draft WNIMMP at the Community Impacts Consultation in July 2021. The traffic impact monitoring scheme is secured in Schedule 2 of the draft Development Consent Order [**REP1-042**]and would require approval by the Secretary of State, after consultation with relevant local highway and planning authorities, which would begin one year before the tunnel area opens.

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		The Applicant is obliged to work with local highway authorities and others to align national and local plans and investments, balance national and local needs and support better end-to-end journeys for road users (paragraph 5.19 of Highways England: Licence (Department for Transport, 2015)). The Applicant will continue to deliver against this obligation in its collaborative work with local authorities. A road connecting the Project and the Tilbury area was considered after the Preferred Route Announcement in 2017, and later included as a RIS3 pipeline scheme in the Road Investment Strategy 2: 2020-25 (DfT, 2020) as the Tilbury Link Road. As set out in Section 6.5 of the Interrelationship with other Nationally Significant Infrastructure Projects and Major Development Schemes [**APP-550**], a decision was taken to not include the Tilbury Link Road as part of the application for development, as it was not considered necessary to help meet the Scheme Objectives. This decision was taken following finalisation of the Project's transport model in 2017, and rationalisation of the proposed design of the A13 junction. The Applicant is working with roadside service facility operators, the haulage industry and road user groups to consider further the need for roadside service facilities and, if a need is identified, the most appropriate location on the strategic road network. Any future roadside service facility would be developed and operated by a third-party roadside service facility operator and would need planning consent from the local planning authority, providing opportunities for interested parties to make their views known about those proposals at that time – for example, commenting on what facilities should be provided, such as electric vehicle charging points or HGV parking. **In response to estimated cost of the proposed LTC ever rising:** The Accounting Officer Assessment was published on 6 January 2023 on the DfT's website: **https://www.gov.uk/government/publications/government-major-projects-portfolio-accounting-officer-assessments/lower-thames-crossing-accounting-officer-assessment-december-2022** The assessment was completed following a cost and schedule review undertaken in 2022 with the last investment decision point being the 2020 outline business case (OBC). The assessment concluded '*There is a strong strategic case for the Lower Thames Crossing. The Dartford Crossing is one of the worst performing parts of the Strategic Road Network (SRN) from the volume of traffic, with congestion and incidents on the route significantly having an effect on customer journeys and economic growth. The LTC will relieve this congestion as well as promote economic growth through new journeys across the Thames helping to facilitate economic growth north and south of the Thames, as well as nationally.* *As a Tier 1 scheme, the project will return to the NH investment committee and DfT IPDC at six-monthly intervals (or sooner) if factors affecting the value for money, schedule, costs and/or benefits of the scheme change. LTC is reliant on the successful outcome of the DCO application and government's final funding and investment decisions at full business case'.*

REP1-426 Thames Enterprise Park Limited

Rep ID	WR Submitter	WR/Applicant's Response
REP1-426	Thames Enterprise Park Limited	**WR:** WR link: **REP1-426**
		Applicant's Response: **Engagement** The Applicant notes Thames Enterprise Park's (TEP's) in principle support for the Project. The TEP Written Representation (WR) refers to the engagement between the Applicant and TEP to date, specifically on the effects of the Project on traffic flows. For completeness, the Applicant provides a record of engagement to date generally and on this matter specifically: • The Applicant originally met with TEP representatives on 5 February 2020, as an introductory meeting and to provide a briefing on the Supplementary Consultation. Following that, the Applicant sent through key Project updates to TEP representatives. • The Applicant then met with a wider team from TEP in November 2022, to discuss traffic modelling. Following the meeting on 25 November 2022, the Applicant developed an Non Disclosure Agreement (NDA) with TEP and then shared the relevant traffic modelling data. • Following NDA sign off in December 2022, the Applicant and the TEP team met again on 12 January 2023 to further discuss the traffic data which had been shared with TEP. • As agreed during the 12 January meeting, the Applicant shared GIS shapefiles from the Lower Thames Area Model (LTAM) with the TEP team. • The Applicant was then keen arrange a follow up meeting to discuss VISSIM modelling with the TEP team. The Applicant reached out to TEP over emails in January and February 2023 requesting availability. • The Applicant followed up again on 12 June 2023 to remind the TEP team about the start of examination and to offer a meeting to discuss any questions. A follow up meeting was arranged for 27 June, which had to be rescheduled to 14 July 2023 due to availability. During the meeting, the Applicant discussed the VISSIM modelling. • The Applicant is very keen to collaborate with the TEP team, to ensure TEP have a thorough understanding of the Applicant's traffic modelling. The Applicant will therefore look to develop a Statement of Common Ground with TEP.

Rep ID	WR Submitter	WR/Applicant's Response
		Transport modelling and assessment The Department for Transport has issued guidelines on how transport models should be built, and the extent to which the predictions of traffic flows and times produced by the model compare with real life. The Applicant considers that the model is suitable for assessing the Project and its impacts along the A13, and at the Orsett Cock and Manorway junctions. The Applicant has undertaken local junction modelling (using microsimulation modelling within VISSIM) for both the Orsett Cock and Manorway junctions. These models have been developed in partnership working with Thurrock Council. Reports relating to both models have been submitted by the Applicant at Deadline 1. This has been provided in Localised Traffic Modelling [**REP1-187**]. The physical extents of the models have been agreed with Thurrock Council as part of their development. The Applicant does not consider that there is interaction between the two junctions and the modelling results for neither junction show interaction between traffic using the junction with that on the A13 mainline. The Applicant has set out the time periods assessed within the Applicant's strategic transport model, together with reasoning as to how they were selected within Section 3.3 of the Combined Modelling and Appraisal Report Appendix B: Transport Model Package [**APP-520**]. The model hours assessed within the localised traffic models were agreed with Thurrock Council as part of their development. Only the AM and PM peaks were considered as these represent the busiest times on the network. The selection of the hours for the Orsett Cock model is detailed within Localised Traffic Modelling Appendix B – Orsett Cock VISSIM Local Model Validation Report [**REP1-188**]. At the Manorway junction, the hours from the LTAM were used as observed data was not available when the model was built. **A13/A128 Orsett Cock junction and the A13/A1014 Manorway junction** The Applicant recognises that the Project will change the pattern of traffic in the region. In many places on the network, and within Thurrock, this would lead to beneficial impacts on the network, and in some cases, it would lead to adverse impacts. Overall, the benefits on the road network would outweigh the adverse impacts, and this is reflected in the positive economic benefit of the Project within Thurrock as set out in Chapter 5 of Need for the Project [**APP-494**], Chapter 4 of the Planning Statement [**APP-495**] and Combined Modelling and Appraisal Report - Appendix D [**APP-524**, **APP-525**, **APP-526** and **APP-527**]. Chapter 7 of the Transport Assessment [**APP-529**] includes details of the scale of impacts both on roads and junctions, setting out where impacts are forecast to be adverse or beneficial. The forecast impacts of the Project on the highway network are also set out in Chapter, which includes junctions along the A13 such as the Orsett Cock and Manorway junctions.

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		A13/A128 Orsett Cock junction Traffic modelling does not indicate that the Manorway junction would be used as an alternative route, to avoid Orsett Cock junction, to reach Port of Tilbury by U-turning at Manorway junction to access the A1089. There is some slow-moving traffic at the eastbound A13 off-slip but it is not sufficient that traffic would instead drive the longer distance to Manorway and U-turn there to come back on the A13 to Orsett Cock or the A1089. The Applicant considers that the Orsett Cock junction would operate acceptably in future years with the Lower Thames Crossing. The modelling does not show that there would any interaction between the two junctions. Modifications to the design of the Project presented at Local Refinement Consultation led to changes in traffic routing. The revised design does not lead to an increase in the use of the A1013 by Port of Tilbury heavy goods vehicle (HGV) traffic as it would be able to join the A1089 via the Orsett Cock junction from the A13 or the Project depending on the direction of travel of these vehicles. **A13/A1014 Manorway junction** The Manorway junction is forecast to experience delays and congestion without the Project. The Applicant's forecasts as shown in the Traffic Forecasts Non-Technical summary [**APP-528**] indicate there would be additional traffic on the A13 as more people cross the Thames for business, leisure, or to access services. At the Manorway junction the A13 reduces from three lanes to two lanes and this causes some delay to traffic wishing to join the A13 eastbound at this junction. The impact of the Project is indirect, as it would lead to increased flows on the A13 mainline. The Applicant's traffic modelling shows that there would be a very low number of vehicles (which originate from the A128 north of the Orsett Cock junction and wish to use the Project) U-turning at the Manorway junction as a result of the layout of the proposed A13/A1089/A122 Lower Thames Crossing junction. The performance of the junction within both the strategic modelling and localised traffic modelling for the Manorway junction includes this traffic. The Project's proposed approach to monitoring impacts on the road network is summarised within Chapter 10 of the Transport Assessment [**APP-529**], and set out fully in the Wider Network Impacts Management and Monitoring Plan [**APP-545**]. The Project consulted on the Wider Network Impacts Management and Monitoring Plan as part of the Community Impacts Consultation in July 2021. This document sets out how the Applicant would work with local authorities and the Department for Transport, and the role of the Applicant and other organisations in the future management of the road network. The Applicant has set out how its approach to wider network impacts, including at the Orsett Cock and Manor Way A13 junctions, is compliant with policy within Transport Assessment Appendix F: Wider Network Impacts Management and Monitoring Policy Compliance [**APP-535**]**.**

Rep ID	WR Submitter	WR/Applicant's Response
		Construction timing and phasing The outline Traffic Management Plan for Construction (oTMPfC) [**REP1-174**] describes the approach to traffic management during construction, including measures that could be taken to reduce impacts on local communities during construction. In advance of the construction of the Project a Traffic Management Plan (TMP) will be prepared for each part of the works. Table 2.3 of the oTMPfC [**REP1-174**] identifies stakeholder considerations that would be addressed as a minimum by the TMP; this includes impacts on business hubs such as the Thames Enterprise Park, and states that activities such as advance warning/particular sensitivity around significant events, particularly evenings and weekends would be incorporated into the TMP and engagement with relevant stakeholders would take place as appropriate. This is secured under Schedule 2 Requirement 10 'Traffic management' of the draft Development Consent Order [**REP1-042**].

REP1-429 Upminster & Cranham Residents' Association

Rep ID	WR Submitter	WR/Applicant's Response
REP1-429	Upminster & Cranham Residents' Association	**WR** WR Link: **REP1-429**
		Applicant's Response: **In response to local traffic impacts:** Once the Project opens for traffic, there will be changes in how traffic flows across the region. These changes are set out in Chapter 7 of the Transport Assessment [**APP-529**]. In many places on the network, and notably at the Dartford Crossing, this would lead to significant beneficial impacts on both journey times and journey reliability. In some locations this change in road user decisions could lead to adverse changes. Overall, the benefits on the road network would outweigh the adverse impacts, and this is reflected in the positive economic benefit of the Project as a whole, and within each affected local authority area. The potential for increased traffic flows leading to the severance of communities has been assessed, and where appropriate measures have been proposed as set out in Table 7.10 of the Health and Equalities Impact Assessment [**APP-539**]. Front Lane and St Mary's Lane were not identified as requiring measures, so none have been proposed by the Applicant in these locations. **In response to impact of Roads, PRoW and New Routes:** Public Rights of Way (PRoWs) within the vicinity of the Order Limits have been identified and are shown on Environmental Statement (ES) Figure 13.4: Population and Human Health Assessment - Proposed WCH Links [**APP-320**]. The Project Design Report Part E: Design for Walkers, Cyclists and Horse Riders [**APP-512**] shows the footpaths in the area of Ockendon Road that are affected. These are footpaths 151, 230, 251 and 252. The effects on PRoWs that would be temporarily or permanently affected by the construction works north of the River Thames are identified in Table 13.66 of ES Chapter 13: Population and Human Health [**APP-151**]. The most significant effect is on footpath 231, which is classed as 'Moderate Adverse'. Construction impacts on PRoWs are detailed in the Transport Assessment Appendix A: Public Rights of Way [**APP-530**]. Temporary diversion routes, where required, would be in place until the construction works are complete. The Register of Environmental Actions and Commitments (REAC) contained in ES Appendix 2.2: Code of Construction Practice [**REP1-157**] includes commitment PH001 around the importance of reducing the durations that footpaths, cycleways and bridleways would need to be closed and mitigation measures to be followed.

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		The Applicant has consulted with relevant stakeholders in developing temporary diversions routes for impacted routes which are detailed in Appendix B of the outline Traffic Management Plan for Construction [**REP1-174**].This engagement will continue in advance of closing PRoWs, whereby the temporary diversion route would be determined through discussions with the local highway authority closer to the time as other factors may need to be taken into account to make the decision (e.g. other works in the nearby area which may be external from the Project works). Refer to Chapter 5 of the outline Traffic Management Plan for Construction. **In response to Air Quality and Health Impacts:** The ES included an air quality assessment ES Chapter 5: Air Quality [**APP-143**]). This considered sensitive receptors, and was assessed to the relevant air quality thresholds (Air Quality Objectives and Limit Values, which are inherently protective of the environment and health). The methodology applied follows Design Manual for Roads and Bridges LA 105 (Highways England, 2019), to ensure the Applicant can test the Project's impacts against the requirements in the National Policy Statement for National Networks (NPSNN) (Department for Transport (DfT), 2014). This assessment was completed, submitted and concluded that the operational phase does not result in a significant effect on human health receptors. While sufficient to determine compliance with the NPSNN, residual concerns were noted through wider engagement, and additional work has been initiated to set potential risk of changes in pollutants into context and to respond to concerns from stakeholders in relation to non-threshold pollutants, by assessing the potential health risk from changes in pollutant concentration regardless of the absolute levels and whether these exceed legal thresholds. **In response to Green Belt Loss, Wildlife and Habitats:** The effects of the Project on terrestrial biodiversity have been assessed within ES Chapter 8: Terrestrial Biodiversity [**APP-146**] and specifically include: • Designated sites • Areas of ancient woodland and veteran trees • Habitats and species • The effects of habitat loss and fragmentation on ecological receptors Chapter 8 describes the magnitude of the impacts, the measures proposed to avoid, reduce, and compensate for the effects and any residual effects on the receptors identified above. These measures include the creation of significant areas of habitat (woodland planting; creation of open mosaic habitat; wetland habitats), the locations of which would act to link up existing similar habitats and areas of high biodiversity interest. These are detailed within ES Figure 2.4: Environmental Masterplan Sections [**APP-159**; **APP-160**; **APP-161**; **APP-162**; **APP-163**; **APP-164**; **APP-165**; **APP-**

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		166; APP-167; APP-168] and the Design Principles [APP-516]. Their long-term management provision is reported within the outline Landscape and Ecology Management Plan [REP1-173]. ***In response to Construction Compounds and Traffic:*** Following DCO application submission the Applicant has been discussing this with the London Borough of Havering. While a closure of the road is unavoidable to enable a safe working provision for the construction of the works, the Applicant has committed to a closure cap of 10 months. This will be secured within the Stakeholder Actions and Commitments Register [REP1-176] and referenced in the outline Traffic Management Plan for Construction (oTMPfC) [REP1-174]. The Ockendon Road closure and diversion route is detailed in the oTMPfC [REP1-174]. Separate to the full road closure of Ockendon Road, lane closures with temporary traffic lights may also be required for installation of utilities in Ockendon Road. These are anticipated to last six months and will be carried out early in the construction programme. Details can be found within Table 4.2 of the oTMPfC [REP1-174]. As part of the preparation of the Traffic Management Plans, a Traffic Management Forum will be established to ensure that any traffic management required by the Project is planned, delivered, and managed collaboratively, as detailed in the oTMPfC [REP1-174]. This will be the connection between the Applicant, the Contractor and listed stakeholders. The Project Design Report [APP-508; APP-509; APP-510; APP-511; APP-512; APP-513; APP-514 and APP-515] and Consultation Report [APP-064; APP-065; APP-066; APP-067; APP-068 and APP-069] illustrate how the Applicant has responded to public consultation feedback in relation to design. There will be ongoing engagement with stakeholders during the detailed design phase as part of the development of the control plan documents for implementation during the construction phase. Further information on the control plan is provided in Section 14 and Plate 14.1 of the Introduction to the Application [APP-003]. As set out in the Statement of Engagement [APP-091], paragraph 7.3.1, the Applicant will continue engagement and information sharing during construction. Engagement and Communications Plans will be produced with the Contractors which will provide a detailed programme of community engagement, setting out how relevant planning authorities, communities, stakeholders and affected parties will be engaged with throughout the construction period. This is in conjunction with ES Appendix 2.2: Code of Construction Practice [REP1-157], Chapter 5, Communication and Community Engagement; paragraph 5.2.5 provides further detail on how the process will be managed. **In response to the queries related to the construction compounds:** Within the area of Upminster and Cranham the Applicant requires to construct three compounds: M25 compound, Ockendon Road compound and Warley Street compound. None of the compounds referenced sit within a

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		conservation area. The M25 compound is adjacent to the North Ockendon Conservation Area. ES Chapter 6: Cultural Heritage [**AS-044**] provides an assessment of the effects on the Conservation Area and identifies relevant mitigation measures. Each compound has been located and sized to allow safe and efficient working for the delivery of the works. The requirements and works associated with each of the compounds can be found in paragraph 2.6.385 – 2.6.394 of ES Chapter 2: Project Description [**APP-140**] and Section 6.6 of ES Appendix 2.2: Code of Construction Practice [**REP1-157**]. During construction, ES Appendix 2.2: Code of Construction Practice [**REP1-157**] provides a series of commitments and controls that the Applicant will put into place to manage the impacts of construction compounds. This includes management of noise and light pollution whereby Chapter 7, the REAC presents the good practice and essential mitigation commitments identified in the ES. For example: • REAC ref. no. NV004: Where appropriate, consents would be obtained from the relevant local authorities under Section 61 of the Control of Pollution Act 1974 (which may include noise and vibration limits where relevant) for the proposed construction works. • REAC ref. no. NV009: During the construction phase, day and night-time noise monitoring would be undertaken at locations identified in consultation with the relevant local planning authorities to ensure that the mitigation measures suggested are working effectively. • Code of Construction Practice paragraph 6.8.3: Site lighting will be designed, positioned, and directed to prevent or minimise light disturbance to nearby residents. The Applicant will provide communication as required and advance notice of activities. Paragraph 5.3.2 of ES Appendix 2.2: Code of Construction Practice [**REP1-157**] states '*At least two weeks before planned works are carried out, information sheets relating to the programmed activities will be distributed. The information sheets will detail the expected disruptions and measures being taken to avoid, minimise or mitigate the adverse impacts of these works. There may be circumstances where, for example, emergency works need to be carried out and notification may not meet the timeframe*'. A Community Engagement Strategy will be created as detailed in ES Appendix 2.2: Code of Construction Practice [**REP1-157**] Section 5. Communication with local authorities, councillors, parish councillors and the Project's 'neighbours' will be undertaken throughout the construction phase, including through Community Liaison Groups who would also be invited to the Traffic Management Forum to consult on traffic management measures where appropriate. This will provide a means of communications with local residents. **In response to Climate Change Risk Assessment:** A detailed flood risk assessment (FRA) [**APP-460** to **APP-477** and **REP1-171**] has been undertaken for the Project design and agreed with the Environment Agency. An update was undertaken in discussion with the Environment

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		Agency and submitted at Deadline 1. A detailed assessment of flood risk across the Project's lifetime taking into account future climate change is presented in Part 6, Section 7.2 of the FRA [**REP1-171**]. **In response to Loss of Ancient and Other Woodland:** The Applicant has carefully considered the impact of the Project upon ancient woodland and veteran trees throughout the route selection process and consideration of alternatives as set out in the Planning Statement Chapter 5 [**APP-495**]. The Project has also been considered against NPSNN paragraph 5.32 as set out in paragraphs 6.5.77 to 6.5.84 of the Planning Statement [**APP-495**] concluding that *"the national need and benefits which would be delivered by the Project (which has sought to minimise impacts and build in biodiversity resilience in the longer term) clearly outweigh the loss of ancient woodland and veteran trees... The Project, therefore, accords with NPSNN paragraph5.32."* (paragraph 6.5.84). As set out in Section 7.3 of the Planning Statement [**APP-495**] the Applicant has had due consideration to the NPPF where it is relevant and directed to do so by the NPSNN. The policy requirement in NPPF paragraph 180(c) "...unless there are wholly exceptional reasons[63]…" is clarified by footnote 63 which states: "For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat." As set out above, the Applicant considers that the national need and benefits of the Project clearly outweigh the loss of ancient woodland and veteran trees. The Project, therefore, accords with NPSNN paragraph 5.32 and NPPF paragraph 180(c). The approach to replacement/compensatory woodland planting locations is to provide connectivity between parcels of ancient woodland and resilience for retained areas of ancient woodland, in some cases this overlaps with some areas of replacement public open space. The locations of these areas are within and closely located to the communities in the Borough. **In response to New Road Open:** 'Post construction noise monitoring cannot provide a reliable gauge for whether the predicted magnitude and extent of operational adverse impacts are greater or less than those predicted in the assessment.' For this reason, in line with DMRB LA 111, the Applicant is not proposing to undertake operational noise monitoring. For more detail see ES Chapter 12: Noise and Vibration, Section 12.8 [**APP-150**].

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