Lower Thames Crossing

7.2 Planning Statement Appendix A – National Policy Statement for National Networks (NPSNN) Accordance Table (Clean version)

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Lower Thames Crossing

7.2 Planning Statement
Appendix A – National Policy Statement for National Networks (NPSNN) Accordance Table (Clean version)

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Appendix A National Policy Statement for National Networks Accordance Table

A.1.1 This appendix provides an assessment of the Project's strategic alignment and conformity with the National Policy Statement for National Networks (NPSNN). The appendix is set out as follows:

a. Table A.1: The Project's conformity with NPSNN Chapter 2

a. Table A.2: The Project's conformity with NPSNN Chapter 3

b. Table A.3: The Project's conformity with NPSNN Chapter 4

c. Table A.4: The Project's conformity with NPSNN Chapter 5

A.1.2 The responses in the NPSNN Accordance Table signpost to other relevant documentation submitted as part of the application for development consent and provide a summary of the findings where appropriate. The following sources of information have been used to inform the responses to the NPSNN Accordance Table:

a. Consents and Agreements Position Statement (Application Document 3.3)
b. Statement of Reasons (Application Document 4.1)
c. Consultation Report (Application Document 5.1)
d. Environmental Statement (ES) (Application Document 6.1, 6.2 and 6.3)
e. Environmental Masterplan (Application Document 6.2)
f. Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3)
g. Habitats Regulations Assessment (Application Document 6.5)
h. Need for the Project (Application Document 7.1)
i. Planning Statement (Application Document 7.2)
j. Project Design Report (Application Document 7.4)
k. Design Principles (Application Document 7.5)
l. Road User Charging Statement (Application Document 7.6)
m. Combined Modelling and Appraisal Report (Application Document 7.7)
n. Transport Assessment (Application Document 7.9)
o. Health and Equalities Assessment (Application Document 7.10)
p. Sustainability Statement (Application Document 7.12)
q. Preliminary Navigation Risk Assessment (Application Document 7.15)

A.1.3 In March 2023 Government published a draft review of the 2014 NPSNN. In response to Question 16.1.1 of the Examining Authority's (ExA) first written questions issued on 15 August 2023 [**PD-029**] the Applicant prepared its Deadline 4 submission Policy accordance assessment of the Project against the consultation draft NPSNN (published March 2023) [**REP4-209**]. This submission presents an assessment of the Project against the draft policies in the emerging draft review NPSNN. The assessment is presented in the same format as the tables in this Appendix below.

A.1.4 An updated version of that Deadline 4 submission is being submitted at Deadline 9 [**Document Reference 9.98 (2)**] to amend any factual changes that have occurred following submission and during the hearings.

Table A.1 National Policy Statement for National Networks (NPSNN) – Chapter 2

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
2 The need for development of the national networks and Government's policy		
2.1 NPSNN	The national road and rail networks that connect our cities, regions and international gateways play a significant part in supporting economic growth, as well as existing economic activity and productivity and in facilitating passenger, business and leisure journeys across the country. Well-connected and high-performing networks with sufficient capacity are vital to meet the country's long-term needs and support a prosperous economy.	The Project would connect the A2 and M2 in Kent, east of Gravesend, to the M25 south of junction 29, crossing under the River Thames by means of two bored tunnels. It would connect Kent, Thurrock and Essex, providing over 80% additional road capacity across the River Thames1. Appendix C and Appendix D of the Combined Modelling Appraisal Report (Application Document 7.7) show the Project would support sustainable local development and regional economic growth in the long term by providing improved journey times and relieving congestion on the Dartford Crossing and approach roads. These improvements would make the Lower Thames area and the south east of the UK more attractive for businesses to locate and would help in promoting a competitive local economy. Through these improvements, the Project would also benefit leisure and business travellers by providing quicker, more reliable journey times locally, regionally and nationally. This would help meet the demands of future traffic growth east of London. The economic benefits of the Project are described in Chapter 4 of the Need for the Project (Application Document 7.1).
2.2 NPSNN	There is a critical need to improve the national networks to address road congestion and crowding on the railways to provide	Chapter 3 of the Need for the Project (Application Document 7.1) explains how the Project would reduce congestion at the

[1] LTAM runs CM12, CS12

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
	safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that is capable of stimulating and supporting economic growth. Improvements may also be required to address the impact of the national networks on quality of life and environmental factors.	Dartford Crossing and create additional capacity and increased resilience across the River Thames east of London. This would be achieved through providing a free-flow connection between the A2 and M25, over 80% additional road capacity across the River Thames east of London and a reduction in traffic flows on the Dartford Crossing by 19% in 2030. It will also ease congestion on other key routes. This document predicts average traffic speeds on the road network would rise and journey times would become more reliable through reduced incident delays, reduced diversion impacts and reduced journey time variability (paragraph 1.1.220). The Need for the Project (Application Document 7.1) considers how the Project would support economic growth, locally, regionally and nationally. The Project would also provide travel time savings for users wanting to cross the River Thames east of London. Section 4.4 (Transport – Benefits and Opportunities) of the document refers to journey time comparisons undertaken for key strategic corridors both with and without the Project. Providing an alternative route east of the Dartford Crossing for local, regional and national traffic will increase the resilience of the road network through giving people more choice when deciding how they want to cross the River Thames and providing an alternative in the case of incidents or closures due to bad weather at the other River Thames crossings. There would be a reduction in the collision rate (collisions per vehicle mile travelled) as a result of a managed less congested network (Transport Assessment (Application Document 7.9) and the Combined Modelling and Appraisal Report (ComMA) Appendix D (Application Document 7.7).

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
		The Project will connect the two economies of Kent and Essex, enhance the strengths of the Thames Estuary region in relation to transport and logistics and reduce the need to duplicate land uses. Table 8.2 of the Health and Equalities Impact Assessment (Application Document 7.10) summarises the health and equalities benefits which would be delivered by the Project once operational, including improved recreational access to open space and nature and access to work/ training.
2.3 – 2.5 NPSNN	Response considered unnecessary as the paragraphs provide relevant background / context to the NPSNN.	No response required.
2.6 NPSNN	There is also a need for development on the national networks to support national and local economic growth and regeneration, particularly in the most disadvantaged areas. Improved and new transport links can facilitate economic growth by bringing businesses closer to their workers, their markets and each other. This can help rebalance the economy.	Fundamentally the Project is required to drive economic growth through addressing the lack of road capacity east of London and enabling increased accessibility between Kent, Thurrock and Essex. Reliable river crossings are essential for the provision of services and goods, enabling local businesses to operate effectively and for residents to access housing, jobs, education and leisure facilities on both sides of a river. The economic benefits to be delivered by the Project are, in part derived from the strategic location of the Dartford Crossing, the shortest freight route between Kent and the major distribution centres in the Midlands and the North. The Government is concerned that the UK economy is not functioning efficiently due to 'market distortions' or failures (DfT, 2018). The Need for the Project (Application Document 7.1) explains how the economy of the south east suffers from low business productivity, particularly in Thurrock, Gravesham and Medway. This is largely due to their location, but exacerbated by

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
		the congestion, delays and unreliable journey times caused by inadequate road infrastructure. The Need for the Project (Application Document 7.1) also sets out the Scheme Objectives which include supporting local development and regional economic growth in the medium to long term. The issues created by the current situation at the Dartford Crossing on the economy are also set out in the Need for the Project (Application Document 7.1). This includes: • Traffic disruption including congestion • Poor journey time reliability • Limited alternative crossings of the River Thames
2.7 NPSNN	In some cases there may be a need for development to improve resilience on the networks to adapt to climate change and extreme weather events rather than just tackling a congestion problem.	Chapter 3: Need for the Project (Application Document 7.1) sets out the Scheme Objectives, including improvements to the resilience of the Thames crossings and the major road network. Currently at the Dartford Crossing, when crosswind speed exceeds 70mph, the Queen Elizabeth II Bridge is closed to all traffic for safety reasons. Because the Project has been designed as tunnels rather than a bridge, windspeed would not cause closures at the river crossing for the Project as it does currently at the southbound Dartford Crossing. ES Chapter 15: Climate (Application Document 6.1) sets out other measures the Project has implemented to build in resilience to climate change. These measures include the vertical alignment of the carriageway and protection measures for the tunnels including appropriate allowances for climate change effects.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
2.8 NPSNN	There is also a need to improve the integration between the transport modes, including the linkages to ports and airports. Improved integration can reduce end-to-end journey times and provide users of the networks with a wider range of transport choices.	The major international ports in Kent and Essex, including the Port of Dover, Port of London Medway, Port of Tilbury and London Gateway Port, are heavily dependent on the strategic road network at or near the Dartford Crossing. Moreover, the Channel Tunnel gateway plays an important complementary role in trade with the EU and contributes to HGV and Light Goods Vehicle traffic in the region. The Project, in supporting these ports is therefore essential in aiding international trade. The Need for the Project (Application Document 7.1) recognises that the Dartford Crossing provides a strategic link between the UK and Europe, enabling goods and people to flow between the Channel Ports and the UK's industrial heartlands (Midlands and North of England) and beyond, and explains that the lack of capacity across the River Thames and the congestion at the Dartford Crossing 'threaten to weaken the UK's Industrial Strategy, increasingly disrupt trade flows, stifle employment growth and hamper efforts to raise national productivity levels'. The region's ports referred to above, and the Channel Tunnel collectively handled around 40% of England's import and exports of freight by tonnage (excluding petrochemicals) in 2018, with the planned expansion at the Port of Tilbury and the major development plans at London Gateway Port potentially resulting in further job creation. The Project's transport modelling forecasts have shown that road traffic to and from these ports on the A2, M25 and A13 would experience faster and more reliable journey times once the Project is operational. The Project's ability to reduce congestion and facilitate growth exports at the region's ports are seen as particularly important in

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
		a post-EU world and critically important in boosting regional productivity.
2.9 NPSNN	Broader environment, safety and accessibility goals will also generate requirements for development. In particular, development will be needed to address safety problems, enhance the environment or enhance accessibility for Non Motorised Users. In their current state, without development, the national networks will act as a constraint to sustainable economic growth, quality of life and wider environmental objectives.	The Need for the Project (Application Document 7.1) sets out the Scheme Objectives which include minimising adverse impacts on health and the environment and improving safety. In particular, the Project seeks improve air quality at the Dartford Crossing, which is heavily impacted by road traffic emissions, with local communities being exposed to high levels of air pollution exceeding Air Quality Strategy (AQS) objectives. The Project design would achieve these objectives, as set out in Chapter 4 of the Need for the Project. The chapter sets out that there would be a reduction in the collision rate (collisions per vehicle mile travelled) as a result of a managed less congested network. This is further detailed in the Transport Assessment (TA) (Application Document 7.9) and the ComMA Appendix D (Application Document 7.7). Furthermore, TA Chapter 9: Road safety, states that as part of the Project's safety and security the new road would include technology to manage traffic and provide better information to drivers, including variable message signs to display variable speed limits, travel information, hazard warnings and both advisory and mandatory signage to drivers. Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1) demonstrates that the Project would improve connectivity and accessibility for walkers, cyclists and horse riders (WCH) through the creation of new and improved Public Rights of Way (PRoWs). The provision of opportunities for WCH is considered more fully in paragraph 3.17 below.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
2.10 NPSNN	The Government has therefore concluded that at a strategic level there is a compelling need for development of the national networks - both as individual networks and as an integrated system. The Examining Authority and the Secretary of State should therefore start their assessment of applications for infrastructure covered by this NPS on that basis.	The M25, A2 and M2 form part of the strategic road network (SRN) in the South East and play a vital role in supporting the economy of the Thames Estuary and the wider South East region. In the Government's Road Investment Strategy 2: 2020–2025 (RIS 2) (DfT, 2020) the Lower Thames Crossing is identified as a Project that will be started or completed in the RIS 2 period and will 'have a national impact, allowing freight traffic to the continent to bypass Dartford, and have an uncongested route to Dover'. Full details on the need for the Project are provided in Chapter 3 of the Need for the Project (Application Document 7.1)
2.12 NPSNN	Roads are the most heavily used mode of transport in England and a crucial part of the transport network. By volume roads account for 90% of passenger miles and two thirds of freight. Every year road users travel more than 431 billion miles by road in Great Britain.	• No response required.
2.13 NPSNN	The Strategic Road Network provides critical links between cities, joins up communities, connects our major ports, airports and rail terminals. It provides a vital role in people's journeys, and drives prosperity by supporting new and existing development, encouraging trade and attracting investment. A well-functioning Strategic Road Network is critical in enabling safe and reliable journeys and the movement of goods in support of the national and regional economies.	National Highways is the strategic highways company charged with operating, maintaining and improving England's motorways and major A roads. The Project would form part of the SRN for which National Highways is responsible. The Need for the Project (Application Document 7.1) states the Scheme Objectives. This includes supporting sustainable local development and regional growth in the medium to long term, improving the resilience of the Thames crossings and the major road network and improving safety. These objectives seek to encourage trade and investment while providing a well-functioning SRN that is safe and reliable.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
2.14 – 2.15 NPSNN	Response considered unnecessary as the paragraphs provide relevant background / context to the NPSNN.	No response required.
2.16 NPSNN	Traffic congestion constrains the economy and impacts negatively on quality of life by: • Constraining existing economic activity as well as economic growth, by increasing costs to businesses, damaging their competitiveness and making it harder for them to access export markets. Businesses regularly consider access to good roads and other transport connections as key criteria in making decisions about where to locate. • Leading to a marked deterioration in the experience of road users. For some, particularly those with time pressured journeys, congestion can cause frustration and stress, as well as inconvenience, reducing quality of life. • Constraining job opportunities as workers have more difficulty accessing labour markets. • causing more environmental problems, with more emissions per vehicle and greater problems of blight and intrusion for people nearby. This is especially true where traffic is routed through small communities or sensitive environmental areas.	The Dartford Crossing currently experiences high levels of traffic congestion with daily traffic flows consistently above the design capacity of the road. This constrains economic activity and growth in the region, while also constraining job opportunities and contributing to environmental problems. The effects of these impacts are considered in Chapter 3 of the Need for the Project (Application Document 7.1), and more fully in Appendix D: the Economic Appraisal Package of the Combined Modelling and Appraisal Report (Application Document 7.7). The Project design seeks to address the identified harmful impacts upon quality of life by: • relieving the congested Dartford crossing and approach roads, and to improve their performance by providing free-flowing, north-south capacity. • supporting sustainable local development and providing increased accessibility to education, healthcare, community and employment opportunities. • providing enhanced recreational opportunities, access to the coast and improvements to public rights of way. • addressing noise and air quality • increasing the resilience and connectivity of local biodiversity sites. With regards to the need to address deterioration in road user experience, Section 4.4 of the Need for the Project (Application Document 7.1) states that, alongside providing improved

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
		journey reliability, the Project would provide travel time savings for users wanting to cross the River Thames east of London. It would also ease congestion on other key routes.
2.17 NPSNN	The national road network is already under significant pressure. It is estimated that around 16% of all travel time in 2010 was spent delayed in traffic, and that congestion has significant economic costs: in 2010 the direct costs of congestion on the Strategic Road Network in England were estimated at £1.9 billion per annum.	The Dartford Crossing experiences high levels of congestion on a regular basis. The Dartford Crossing operated above its design capacity on 337 days during 2019 (based on Highways England Dart Charge 2019 data). Once the Project is opened it will operate below its design capacity. As well as affecting journeys across the River Thames, traffic congestion also affects journeys on local roads around the Dartford Crossing. It also leads to wasted time for people and industry and affects economic productivity.
2.18 NPSNN	The pressure on the road network is forecast to increase with economic growth, substantial increases in population and a fall in the cost of car travel from fuel efficiency improvements. Under the Department's 2014 estimates, it is forecast that a quarter of travel time will be spent delayed in traffic by 2040, with direct costs rising to £9.8 billion per annum by 2040 on the Strategic Road Network in England, without any intervention. Under our low and high demand scenarios, the proportion of travel time spent delayed in traffic could range between 12.1% and 21.8% on the Strategic Road Network. When considering all the roads within England, our central estimates would amount to: • A 71% increase in the number of hours households spend delayed in traffic each year, from 45 hours in 2010 76 hours in 2040	Traffic modelling forecasts that traffic on the Dartford Crossing would increase by just over 21%[2] in the period 2016-2030 without the introduction of the Lower Thames Crossing. This would lead to increased congestion at the Dartford Crossing, on key approach roads such as the A2, M20, A13 and the A127, and on the local road network in Dartford and Thurrock. The Project would provide a less congested, quicker, more reliable alternative for those wishing to cross the River Thames east of London and, by taking traffic from the existing Dartford Crossing, would release capacity there for local traffic. It would provide over 80% additional road capacity across the River Thames east of London resulting in time travel savings for users wanting to cross the Thames east of London. It would also ease congestion on many other key routes. Additionally, the Lower

[2] Lower Thames Area Model runs N90 (Run 1) and CM12

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
	• 150% increase in the number of working days lost to congestion each year (from 42 million in 2010 to 106 million in 2040).	Thames Area Model predicts that the overall level of traffic using the Dartford Crossing would fall by 19% in the opening year (2030), when compared to the situation without the Project. As identified within The Need for the Project (Application Document 7.1), this will lead to increased road space supply, reduced congestion, reduced journey times, safety benefits and increased journey time reliability.
2.19 – 2.21 NPSNN	Response considered unnecessary as the paragraphs provide relevant background / context to the NPSNN.	No response required.
2.22 NPSNN	Without improving the road network, including its performance, it will be difficult to support further economic development, employment and housing and this will impede economic growth and reduce people's quality of life. The Government has therefore concluded that at strategic level there is a compelling need for development of the national road network.	The River Thames acts as a barrier between Kent, Thurrock and Essex and other parts of the South East economy, which also encompasses East Sussex, Medway and Southend. The region suffers from low business productivity, and this is exacerbated by the congestion at the Dartford Crossing which extends across all days and time periods. The Need for the Project (Application Document 7.1) discusses how the South East Local Economic Partnership Economic Strategy, published in 2018, sets out how the South East region needs to increase its productivity levels by 2030 to bridge the gap compared to the rest of the UK, in terms of Gross Value Added per filled job. This includes relieving pressure on infrastructure and improving workforce skills, more details on education and skills development can be found in the Benefits and Outcomes document (Application Document 7.20) and is delivered through Section 106 Agreements with the relevant local authorities [**Document References 9.164 (2) to 9.169 (2)**].
2.23 NPSNN	The Government's wider policy is to bring forward improvements and enhancements to the existing Strategic Road Network to	The Project would provide a new connection between the A2 and M2 in Kent, and the M25 south of junction 29. The Project

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
	address the needs set out earlier. Enhancements to the existing national road network will include: • junction improvements, new slip roads and upgraded technology to address congestion and improve performance and resilience at junctions, which are a major source of congestion; • implementing "smart motorways" (also known as "managed motorways") to increase capacity and improve performance; • improvements to trunk roads, in particular dualling of single carriageway strategic trunk roads and additional lanes on existing dual carriageways to increase capacity and to improve performance and resilience.	route would be approximately 23km long, 4.25km of which would be in tunnel. Junctions are proposed at the following locations: • New junction with the A2 to the south-east of Gravesend • Modified junction with the A13/A1089 in Thurrock • New junction with the M25 between junctions 29 and 30 The Project would also provide widening and improvement to both the M25 at the northern limits of the route and on the A2 at the southern end as part of its works. The existing A13/A1089 junction would also require improvements to connect to the Project route. Chapter 2: The Project of the Environmental Statement (Application Document 6.1) sets out the proposed highway alterations and improvements.
2.24 NPSNN	The Government's policy on development of the Strategic Road Network is not that of predicting traffic growth and then providing for that growth regardless. Individual Schemes will be brought forward to tackle specific issues, including those of safety, rather than to meet unconstrained traffic growth (i.e. 'predict and provide').	The Government's aim, announced in the Road Investment Strategy for the 2015/16 to 2019/20 Road Period (RIS 1) (DfT, 2015), is to develop the Lower Thames Crossing as a Project for the next road period. The Road Investment Strategy 2: 2020–2025 (RIS 2) (DfT, 2020) includes the Lower Thames Crossing as a Project that will be started or completed during this period and which will, 'have a national impact, allowing freight traffic to the continent to bypass Dartford, and have an uncongested route to Dover'. The Project is essential in order to tackle the existing issues experienced at the Dartford Crossing - congestion, delays and poor journey time reliability at the crossing itself, and on surrounding roads, as this acts a major impediment to economic growth in the South East of England. The River Thames acts as a barrier between Kent, Thurrock and Essex and affects the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
		ability to build strong connections between these communities and the project is required in order to address this.
2.25 NPSNN	On the road network different approaches and measures will be appropriate for different places. This reflects differences in local preferences and choices and differing scope for alternatives to road travel. The network must also offer a coherent mode of transport for national journeys and must combine to form a single, usable network. In general, the nature of some journeys on the Strategic Road Network mean that there will tend to be less scope for the use of alternative transport modes.	The Project is designed to address capacity and congestion issues at the Dartford Crossing (and its approach roads) as an important route on National Highways' SRN. The Dartford Crossing is currently the only crossing of the River Thames east of London. By providing an additional crossing of the River Thames, the Project would increase cross-river capacity by over 80%. An optioneering study undertaken by DfT in 2009 reviewed the operation of rail infrastructure for both passengers and freight in the Lower Thames area but found that the inclusion of rail infrastructure within the Project was not considered to have a reasonable business case. This is set out in Chapter 5 (Project Evolution and Alternatives) of the Planning Statement (Application Document 7.2). The Transport Assessment (Application Document 7.9) considers the impact of the Project on alternative modes of transport. The reduced journey times and increased reliability to be delivered by the Project would benefit some existing local bus services. The bus service X80 would benefit in particular by the reduced journey times over the Dartford Crossing and increased reliability. The National Express service along the A2 would benefit in the PM peak as would Fastrack A. Any longer-distance coaches that choose to re-route from the Dartford Crossing to the Lower Thames Crossing would benefit from reduced journey times. The Project would also include improvements to existing connections used by WCH and will provide new WCH routes.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
2.26 NPSNN	As stated above, measures to influence the use of the national road network for journeys - including provision of information and traffic management – can play an important part in the delivery of policy objectives, but the effectiveness will vary depending on location. Also, in most cases such measures will not by themselves be a total solution to transport problems on the Strategic Road Network. Widespread demand constraint, involving further costs to motorists, is not current Government policy.	The Transport Assessment (Application Document 7.9), submitted in support of this application, states that as part of the Project's safety and security the new road would include technology to manage traffic and provide better information to drivers, including variable message signs to display variable speed limits, travel information, hazard warnings and both advisory and mandatory signage to drivers. In addition, there is no intention to introduce road pricing in managing demand on the strategic road network as part of the Project in line with current Government policy (paragraph 3.23 of the NPSNN). In Digital Roads (National Highways, 2021a), National Highways have committed to, by 2025, providing real time information on travel times to customers, which will reduce congestion and travel information technology is included in the Design Principles for the Project (Application Document 7.5).
2.27 NPSNN	In some cases, to meet the need set out in section 2.1 to 2.11, it will not be sufficient to simply expand capacity on the existing network. In those circumstances new road alignments and corresponding links, including alignments which cross a river or estuary, may be needed to support increased capacity and connectivity.	The Project would provide a new crossing of the River Thames, providing over 80% additional road capacity across the Thames east of London. Alongside this additional capacity, the project would provide a safer, more reliable and resilient river crossing. In addition to the new route alignment and enhancements to WCH routes, connector roads would be provided to ensure the scheme would integrate well with the existing road network and improvements would also be carried out on the A2. Chapter 5 of the Planning Statement (Project Evolution and Alternatives) (Application Document 7.2) sets out the process of route option identification, selection and development. It explains why the alignment of the Project, including the location of the new tunnel crossing east of Gravesend and west of East

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the National Policy Statement
		Tilbury, was identified as the preferred route. It also sets out why alternatives, such as a bridge crossing or alterations to the Dartford Crossing, would not achieve the Scheme Objectives and be deliverable.
2.28 – 2.58 NPSNN	Response considered unnecessary as the paragraphs relate to rail and rail freight projects.	No response required.

Table A.2 National Policy Statement for National Networks (NPSNN) – Chapter 3

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
3. Wider Government Policy on The National Networks		
Environmental and social impacts		
3.2 NPSNN	The Government recognises that for development of the national road and rail networks to be sustainable these should be designed to minimise social and environmental impacts and improve quality of life.	The development of the Project has been designed to meet the Scheme Objectives set out above, and in Chapter 5 of the Planning Statement (Project Evolution and Alternatives) (Application Document 7.2) and to minimise social and environmental impacts. Where possible, detrimental impacts have been avoided or mitigated, whilst seeking to improve the quality of life. The Project design has incorporated a range of mitigation measures and enhancements in relation to landscape, heritage, biodiversity, access, and other environmental and community effects. An assessment of the potential effects of the Project on the community is presented in Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1). The assessment considers the potential impacts of the Project for pedestrians and cyclists during the construction and operation of the Project, the effect to private assets, community land and human health (including severance of communities). The Sustainability Statement (Application Document 7.11) recognises the importance of sustainability and sets out the key sustainability themes and outcomes for the Project. The intention is to embed sustainability into the Project through the preliminary design, direct specification, challenging Contractors to promote sustainable outcomes or including them in the Register of Environmental Actions and Commitments (REAC).

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		The Project would also deliver a wide range of environmental and social benefits These are discussed further in the Need for the Project (Application Document 7.1), the Benefits and Outcomes Report (Application Document 7.20) the Project Design Report (Application Document 7.4), the Environmental Statement and the Health and Equalities Impact Assessment (Application Document 7.10).
3.3 NPSNN	In delivering new Schemes, the Government expects applicants to avoid and mitigate environmental and social impacts in line with the principles set out in the NPPF and the Government's planning guidance. Applicants should also provide evidence that they have considered reasonable opportunities to deliver environmental and social benefits as part of Schemes.	Care has been taken when developing the Scheme to avoid and minimise negative social and environmental impacts through careful scheme design. Some of the design measures incorporated into the Project to avoid negative impacts are referred to as 'embedded mitigation'. These measures are secured via Requirement 3 of the draft Development Consent Order. Where it has not been practicable to avoid such impacts, mitigation measures are proposed to minimise the potential adverse effects of the Scheme. This is referred to as 'essential mitigation' and is secured via the Register of Environment Actions and Commitments. In addition, the Project proposes a number of further controls and measures which are set out in the Code of Construction Practice, Outline Traffic Management Plan for Construction, and the Stakeholder Actions and Commitments Register. The selected alignment was chosen to balance air quality, noise and visual effects, avoid heritage assets, reduce intrusion into the Ramsar, avoiding the SPA. The further Design Refinement Consultations in the summer 2020 resulted in the provision of environmental mitigation, compensation and enhancement measures, such as habitat creation, landscaping and public rights of way. Another refinement has been the narrowing of the M2/A2 corridor through the Kent Downs Area of Outstanding Natural

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Beauty (AONB) and Shorne Woods Country Park. Key opportunities which have been identified and have influenced the development design include the provision of new planting and green bridges to increase connectivity between habitats which are currently fragmented and also introducing nitrogen deposition compensation sites within the Order Limits which will also deliver wider community and carbon offsetting benefits. The development of the Project design is set out in the Project Design Report. The principles of the NPPF relevant to each topic is covered in the Environmental Statement (ES) (Application Document 6.1), and local planning policies that need to be considered are set out in Chapter 7 of this Statement. An Environmental Impact Assessment (EIA) of the Project has been carried out and is reported in the ES which assesses the likely significant environmental effects of the Project and presents mitigation for the environmental effects arising including the measures referred to above. The residual significant environmental effects of the Project (following mitigation) are described in the ES. The environmental and social benefits of the Project are summarised in the Need for the Project (Application Document 7.1). The delivery of environmental and social benefits as part of the Project are described more fully in the accompanying Green Infrastructure Study (Appendix H to this Statement). This provides a conceptual perspective or 'bigger picture' for the delivery of large-scale Green Infrastructure as part of mitigation for the Project to be embedded in an Environmental Masterplan (Application Document 6.2, Figure 2.4 of the ES) demonstrating how existing and proposed Green Infrastructure can connect with

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		and enhance communities and wildlife at the sub-regional and city-scale. These measures will be implemented during the construction phase where practicable in order to maximise the overall benefits. The study focuses on land that needs to be safeguarded, managed or secured in positive ways to create a multifunctional network of green spaces and assets for which investment can deliver the greatest range of benefits in line with the Scheme Objectives.
3.4 – 3.5 NPSNN	Response considered unnecessary as reference is made to Chapter 5 for detailed policy on environmental mitigation and an acknowledgement that some adverse local effects of development may remain in delivering environmental benefits,	No response required
Emissions		
3.6 NPSNN	Transport will play an important part in meeting the Government's legally binding carbon targets and other environmental targets. As part of this there is a need to shift to greener technologies and fuels, and to promote lower carbon transport choices. Over the next decade, the biggest reduction in emissions from domestic transport is likely to come from efficiency improvements in conventional vehicles, specifically cars and vans, driven primarily by EU targets for new vehicle CO2 performance. Electrification of the railway will also support reductions in carbon.	The Project will facilitate the launching of National Highways zero-carbon construction innovation programme and will enable the development of a roadmap to net zero for key construction products. The Carbon and Energy Management Plan (Application Document 7.19) sets out the mechanisms and management arrangements proposed to support National Highways' plan to become a net zero business. Appendix I: Carbon Strategy and Policy Alignment of this Planning Statement sets out the low carbon innovation and approaches which 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. Whilst the construction of Lower Thames Crossing as a major infrastructure project provides limited scope to contribute to meeting the Government's legally binding carbon and environmental targets, Chapter 15: Climate of the Environmental

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Statement (Application Document 6.1) provides an assessment of greenhouse gas (GHG) emissions arising from the construction and operation of the Project, in accordance with DMRB LA 114 Climate (Highways England, 2019). The GHG assessment concludes that the effect on climate during the construction and operational phases of the Project are anticipated to be not significant. Chapter 15 concludes that the Project would not have a material impact on the Government's ability to meet its carbon reduction targets. A comparison of approximate emissions during the construction and operational phases in relation to carbon budgets is shown in Table 15.15. Paragraph 5.17 of the NPSNN acknowledges that, 'It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets.' Notably, emissions arising as a result of the Project would represent less than 0.1% of total emissions in any five-year carbon budget during which they arise. The GHG impact of the Project would not have a material impact on carbon reduction targets set by the UK government and therefore, it is considered unlikely that the Project would cause significant effects on climate. The project will also promote lower carbon transport choices through maintaining and enhancing connectivity for walkers, cyclists and horse riders.
3.7 NPSNN	Response considered unnecessary as reference made to forecast growth of ultralow emission vehicles.	No response required.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
3.8 NPSNN	• The impact of road development on aggregate levels of emissions is likely to be very small. Impacts of road development need to be seen against significant projected reductions in carbon emissions and improvements in air quality as a result of current and future policies to meet the Government's legally binding carbon budgets and the European Union's air quality limit values. For example: • Carbon - the annual CO2 impacts from delivering a programme of investment on the Strategic Road Network of the scale envisaged in Investing in Britain's Future amount to well below 0.1% of average annual carbon emissions allowed in the fourth carbon budget. This would be outweighed by additional support for ULEVs also identified as overall policy. • Air quality - aggregate air quality impacts from delivering a programme of investment on the Strategic Road Network of the scale envisaged in Investing in Britain's Future are small. Total PM10 and NOx might be expected to increase slightly, but this needs to be seen in the context of projected reductions in emissions over time. PM10 and NOx are expected to decrease over the next decade or so as a result of tighter vehicle emission standards, then flatten, with further falls over time due to greater levels of electric and other ultra-low emission vehicles	Chapter 15: Climate of the Environmental Statement (ES) (Application Document 6.1) indicates that GHG emissions arising from the construction and operational phases of the Project have been assessed on the Do Minimum/Do Something scenarios. The GHG assessment concludes that the effect on climate during the construction and operational phases of the Project are anticipated to be not significant. Chapter 15 concludes that the Project would not have a material impact on the Government meeting its carbon reduction targets. Chapter 5: Air Quality of the ES (Application Document 6.1) assesses the impact of the Project during construction and operation on air quality. The assessment concludes that the operation of the Project would result in both improvements and deteriorations in local air quality associated with changes in traffic flows. The findings show that there are no predicted exceedances of Air Quality Strategy (AQS) objectives/EU Limit Values for PM10 or PM2.5 (particulate matter with a diameter less than 10 microns and 2.5 microns, respectively) at human receptors across the defined study area with or without the Project. There are 24 human receptors where an exceedance is predicted in the Project's opening year and these are mainly confined to the A282 Dartford Crossing, M2 junction 1 to junction 2 and A228 (between M20 junction 4 and M2 junction 2). The Project is expected to lead to more air quality improvements than worsening where the annual mean AQS objective for NO2 is exceeded. The Project would not affect the UK's ability to achieve compliance with the Air Quality Directive. The air quality effects of the Project on European and nationally designated ecosystem sites are considered in Chapter 8: Terrestrial Biodiversity of the ES (Application Document 6.1). The

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		assessment has considered the impacts of the Project from construction dust on designated sites within 200m of any construction works and concluded that construction dust would affect some designated and non-designated sites in the absence of mitigation. Mitigation for reducing construction dust in Chapter 5: Air Quality of the ES (Application Document 6.1) which includes a range of measures to manage dust emissions. This includes wheel washing vehicles on entering and leaving the site, ensuring that spoil is covered and damp when being transported and applying dust suppressants to locations where large volumes of vehicles are entering and exiting the site. Air quality monitoring would also be undertaken during the construction phase. As a result of these measures (along with the temporary nature of any residual impacts), no significant adverse impacts are predicted. No dust impacts would occur during the operation of the project. Additional sites were also assessed where there were potential operational impacts from changes in air quality within 200m of the Affected Road Network (ARN). Further details can be found in Appendix 8.1: Designated Sites Technical Appendix and Chapter 5: Air Quality of the ES (Application Document 6.1) Those sites which were considered and screened in for further assessment can be found in Appendix 8.1: Designated Sites Technical Appendix and Appendix 8.14: Designated Sites Operational Air Quality Assessment of the ES (Application Document 6.3).
Safety		
3.9 NPSNN	The UK's roads are amongst the safest in the world, and there have been significant improvements over past decades. Compared to the 2005- 2009 average, fatalities and serious injuries have decreased 25% to 2013 from the average.	Response provided below

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	Nonetheless, road deaths and injuries are a tragedy for all affected, and accidents also have a major economic cost, estimated at over £14.7 billion a year.46 Incidents on the network also lead to increased unreliability and delay for other users.	
3.10 NPSNN	The Government's overall vision and approach on road safety is set out in the Strategic Framework for Road Safety. It is a vision in which Britain remains a world leader in road safety; where highway authorities are empowered to take informed decisions within their area; where driver and rider training gives learners the skills they need to be safe on our roads; and where tough measures are taken against the minority of offenders who deliberately choose to drive dangerously. As set out in paragraphs to 4.66, Scheme promoters are expected to take opportunities to improve road safety, including introducing the most modern and effective safety measures where proportionate.	The Project has been developed to align with the government's overall vision and approach on road safety. The Project has also been designed in accordance with a number of design principles and technical design codes which support the overarching vision to improve safety and relieve the congested Dartford Crossing and approach roads and improve their performance by providing free-flowing north-south capacity. Primarily, road safety design has been achieved by designing the Project to desirable minimum standards as defined in Design Manual for Roads and Bridges (DMRB) (Highways England, 2020). Specifically, the tunnel design complies with European Directive 2004/54/EC of the European Parliament on minimum safety requirements for tunnels in the Trans-European Road Network. The Project has used modern and effective safety measures such as those set out in the response to paragraph 4.60 below. The Project Design Report (Application Document 7.4), Design Principles (Application Document 7.5) and the Environmental Statement (Application Document 6.1) provide details of the supporting documents which have influenced the Project design and set out the road safety principles. The response to paragraph 4.66 below sets out the approach taken by the Project to assessing safety and the overall expected reduction in accident rates.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
3.11 – 3.12	Response considered unnecessary as this refers to rail development.	No response required
Technology		
3.13 – 3.14 NPSNN	Response considered unnecessary as a general statement on new and emerging technologies.	No response required
Sustainable transport		
3.17 NPSNN	There is a direct role for the national road network to play in helping pedestrians and cyclists. The Government expects applicants to use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new Schemes. The Government also expects applicants to identify opportunities to invest in infrastructure in locations where the national road network severs communities and acts as a barrier to cycling and walking, by correcting historic problems, retrofitting the latest solutions and ensuring that it is easy and safe for cyclists to use junctions.	The Project has considered the needs of pedestrians and cyclists in the design and has identified opportunities to improve or enhance facilities for walkers, cyclists and horse riders (WCH). The needs of these users have been considered during both construction and operational phases of the Project and appropriate mitigation measures identified. Chapter 13: Population and Human Health of the Environmental Statement (ES) (Application Document 6.1) outlines the provision of opportunities for WCH, which are designed to improve access to the existing network for all users (including those with limited mobility). The Project would include comprehensive new or improved provision of PRoW and cycleways as follows: • Existing – Diverted – 3.45km of footpath diverted – 2.14km bridleway diverted • Existing – Improved – 0.48km of improved Byway – 3.02m of improved bridleway – 1.5km of improved footpaths – 4.08km of improved pedestrian-cycle path

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		• Existing – Designation upgrades – 10.69km of footpaths upgraded to bridleway – 0.87km of footpaths upgraded to pedestrian-cycle path • New – 3.2km of new footpath – 15.95km of new bridleway – 7.2km of new pedestrian-cycle path – 5.6km of new pedestrian-cycle-equestrian path – 4.5km of new permissive footpath – 1.4km of new permissive bridleway – 0.95km of new permissive pedestrian-cycle path In response to the severance issues raised by the Project, the needs of WCH are being met in a number of ways, including the creation of green bridges at Thong Lane, Brewers Road, North Road, Muckingford Road, Rectory Road and Green Lane. All severed Public Rights of Way (PRoWs), bridleways and cycle routes are to be re-linked across the Project unless better quality routes can be provided in the vicinity, the route can be rationalised to better link communities, or realigned to provide better connectivity into the existing WCH network. The provisions summarised above demonstrate that the potential impacts on cyclists and pedestrians arising from the Project have been addressed and that where practicable, enhanced provisions have been made.
3.18 NPSNN	Response considered unnecessary as this refers to rail development.	No response required.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
Accessibility		
3.19 NPSNN	The Government is committed to creating a more accessible and inclusive transport network that provides a range of opportunities and choices for people to connect with jobs, services and friends and family.	As set out in the Need for the Project (Application Document 7.1), congestion at the Dartford Crossing impacts surrounding areas on both sides of the River Thames, though the introduction of the Project would relieve existing congestion and provide improved north-south connections, enabling better accessibility to employment and services. The Project would also allow additional journeys across the River Thames improving many journey times, providing increased reliability and thereby enhancing the driver experience and reducing driver stress. Section 4.3 of The Need for the Project (Application Document 7.1) identifies the various benefits which would be delivered by the Project, particularly in relation to walking and accessibility, provision for walkers, cyclists and horse riders, provision of jobs and skills and green infrastructure. Chapter 5 of the Project Design Report and Appendix D (Application Document 7.4) sets out the Project design approach seeks to maximise opportunities to deliver benefits for employment, faster travel times and improved safety and resilience. Chapter 3 of the Design Principles (Application Document 7.5) sets out the Project's design principles for connecting people and places and how this would be achieved. The Transport Assessment (Application Document 7.9) predicts that a small number of buses would see their journey times change by two minutes more. In the case of the AM peak, 10 services would experience quicker journey times, whilst four would experience an increased journey time. In the PM peak, 10 services would see an improvement in their journey time by two

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		minutes or more, with three forecast to see an increase by the same margin.
3.20 NPSNN	The Government's strategy for improving accessibility for disabled people is set out in Transport for Everyone: an action plan to improve accessibility for all. In particular: • The Government will continue to work to ensure that the bus and train fleets comply with modern access standards by 2020, and to improve rail station access for passengers with reduced mobility. The private car will continue to play an important role, providing disabled people with independence where other forms of transport are not accessible or available. • The Government expects applicants to improve access, wherever possible, on and around the national networks by designing and delivering Schemes that take account of the accessibility requirements of all those who use, or are affected by, national networks infrastructure, including disabled users. All reasonable opportunities to deliver improvements in accessibility on and to the existing national road network should also be taken wherever appropriate.	The response above in relation to NPSNN paragraph 3.17 outlines how the needs of the community have been considered during both construction and operational phases of the Project and how appropriate mitigation measures identified. The Project has been designed to provide improved access across the River Thames east of London. National Highways design standards and Project specific details are compliant with national legislation under the Equality Act 2010 and associated Public Sector Equality Duty. Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1) provides an assessment of the Project on population and human health during construction and operation and has been informed by a Health and Equalities Impact Assessment (Application Document 7.10). The assessment has been undertaken to ensure that the Project does not discriminate against or disadvantage people and considers how equality can be advanced. Only one route (Hornsby Lane) would be permanently severed as a result of the Project. In all other cases, temporarily severed PRoWs, bridleways and cycle routes would be re-linked across the Project. The Project design provide new routes for WCH, designed to improve access to the existing network, and maximise access for users (including those with limited mobility). No community assets (e.g. village halls, healthcare facilities, education facilities, religious facilities) would be subject to permanent or temporary land-take as a result of the construction of the Project.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Chapter 3 of the Design Principles (Application Document 7.5) refers to the Project-wide design principles. Connecting people and connecting places forms a key part of the design principles with reference made on how these principles would be achieved, including accessibility to improved routes, including those with limited mobility and maximising space on shared surfaces.
3.21 NPSNN	Applicants are reminded of their duty to promote equality and to consider the needs of disabled people as part of their normal practice. Applicants are expected to comply with any obligations under the Equalities Act 2010.	The Health and Equalities Impact Assessment (Application Document 7.10) reports on the findings of the likely effects of the construction and operational phases of the Project on human health and equalities. In relation to equalities, the Project seeks to promote social inclusion to tackle inequalities and assesses the impact of mental health and wellbeing during construction and whether or not the Project would affect factors associated with mental health and wellbeing. The assessment accords with the Equality Act 2010 by paying due regard to the need to eliminate unlawful discrimination, harassment or victimisation; to advance equality of opportunity; and to foster good relations between communities. The Health and Equalities Impact Assessment refers to consultation and engagement undertaken with residents of the Gammonfields Way Travellers' Site during the course of the Project to raise awareness of the proposals and to gather information regarding the suitability of the proposed replacement site.
3.22 NPSNN	Severance can be a problem in some locations. Where appropriate applicants should seek to deliver improvements that reduce community severance and improve accessibility.	ES Chapter 13: Population and Human Health (Application Document 6.1) assesses the severance effects of the Project during construction and operation based on the findings of the HEqIA (Application Document 7.10) where relevant and describes the mitigation measures proposed. The severance assessments during construction and operation consider the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		potential separation of residents from services they may use within their community as a result of changes in the provision of transport infrastructure or changes in traffic flows arising from the Project. ES Chapter 13: Population and Human Health (Application Document 6.1) identifies properties that would be temporarily affected by changes to access as a result of construction of the Project. The Project would ensure access to these properties is maintained at all times, as secured in the oTMPfC (Application Document 7.14). HGV movements would also be restricted along a number of local roads and construction compounds would be located away from PRoWs, National Trails and cycle routes where feasible to avoid severance during construction. In addition, landscaping has been used to reduce the visual impact of construction compounds for users of PRoWs and neighbouring land uses. This is secured through the Design Principles (Application Document 7.5). As a result of these measures, the Health and Equalities Impact Assessment (Application Document 7.10) concludes there would be a neutral effect on the health of the general population resulting from severance during construction and any adverse effect on the health of sensitive populations as a result of severance during construction would not be significant. A wide range of improvements are proposed as part of the Project design, improving connectivity, filling missing links in the PRoW network and enhancing the safety of routes through the provision of shared pedestrian-cycle tracks along key routes. These are secured through Requirement 3 (detailed design) of the Schedule 2 (requirements) of the dDCO (Application Document 3.1) which requires the Project is carried out in

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		accordance with the General Arrangement Drawings and Design Principles (Application Document 7.5). The Project would not create new severance between communities to the west and east of the alignment and opportunities for walking and cycling is enhanced through the provision of green bridges and footbridges at appropriate locations. The response to paragraph 3.17 above provides a list of proposed WCH routes. Historic severance created as a result of the construction of the M25 is mitigated through the creation of new pedestrian and cycle links. In many instances, the quality of routes is improved, making it more attractive for people to walk and cycle, with associated health benefits. All minor roads crossed by the Project would be reconnected, with the exception of Hornsby Lane which would be permanently closed to vehicular traffic and WCH use. In this instance, the Project proposes a diversion route via the Heath Road footpath, and east along Stanford Road shared surface. As a result of these measures, the Health and Equalities Impact Assessment (Application Document 7.10) concludes that there would be no significant harmful long term severance impacts as a result of the Project.
Road tolling and charging – Government policy		
3.23 NPSNN	The Government's policy is not to introduce national road pricing to manage demand on the Strategic Road Network, comprising the motorways and key trunk roads for which the Secretary of State is responsible.	In line with government policy, it is not proposed to introduce national road pricing as part of the Project.
3.24 – 3.25 NPSNN	The Government will consider tolling as a means of funding new road capacity on the Strategic Road Network. New road	Guidance provides a clear policy basis for the introduction of road user charges on the SRN and for the funding of river and estuarial crossings by tolls. To align with government policy and

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	capacity would include entirely new roads and existing roads where they are transformed by an improvement scheme. River and estuarial crossings will normally be funded by tolls or road user charges	to help the Project meet the Scheme Objectives, it is proposed that vehicles would be charged for using the new Lower Thames Crossing tunnel. The Road User Charging Statement (Application Document 7.6) has been reviewed and approved by the Department for Transport (DfT) which has confirmed that the proposals are in line with Government policy and the Scheme Objectives.

Table A.3 National Policy Statement for National Networks (NPSNN) – Chapter 4

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
4 – Assessment principles		
4.1 – 4.2 NPSNN	The statutory framework for deciding applications for development consent under the Planning Act 2008 is set out in paragraph 1.2 of this NPS. This part of the NPS sets out general policies in accordance with which applications relating to national networks infrastructure are to be decided. Subject to the detailed policies and protections in this NPS, and the legal constraints set out in the Planning Act, there is a presumption in favour of granting development consent for national networks NSIPs that fall within the need for infrastructure established in this NPS. The statutory framework for deciding NSIP applications where there is a relevant designated NPS is set out in Section 104 of the Planning Act.	Required responses below (Paragraphs 4.3-4.4)
4.3 NPSNN	In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account: • its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long term or wider benefits • its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts	The Need for the Project (Application Document 7.1) provides an overview of the transport, economic, community and environmental benefits associated with the Project. The document concludes that the Project would provide an effective solution to deal with the transport challenges facing the Dartford Crossing and the surrounding areas of Kent, Essex and Thurrock, whilst providing economic benefits, both locally and regionally. The Project has been designed to avoid and reduce adverse impacts through a detailed consideration of the route location / alignment, and also incorporating environmental compensation and mitigation measures into the development design. Construction activities would avoid retained vegetation identified on the Environmental Masterplan and be subject to a number of measures in the Register of Environmental Actions and

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Commitments (secured through EMP and DCO Requirement 4 and 5) and construction compounds would be designed to minimise harmful impacts on the local community. Extensive compensation planting is also proposed to offset unavoidable habitat loss and nitrogen deposition impacts and to provide enhancements in the longer term. Table A.4 of this Appendix addresses the impact assessments required by the NPSNN and the conclusions of the assessment of adverse effects, including those residual adverse effects presented in the Environmental Statement (ES) (Application Document 6.1). Based on information presented in Table A.4, it has been concluded that the Project would not cause any adverse effects that, considered individually, cumulatively, or as a whole, are so severe that the decision maker should refuse the application. The Non-Technical Summary to the Environmental Statement (Application Document 6.4) provides a summary of the residual significant environmental effects, including the benefits arising from the Project.
4.4 NPSNN	In this context, environmental, safety, social and economic benefits and adverse impacts, should be considered at national, regional and local levels. These may be identified in this NPS, or elsewhere.	The Environmental Statement (ES) (Application Document 6.1) reports on the Environmental Impact Assessment (EIA), which identifies and assesses the likely significant effects of the Project at national, regional and local levels. The environmental, safety, social and economic benefits of the Project, at a national, regional and local level, are described within Chapter 5 of the Need for the Project (Application Document 7.1) and in response to paragraphs 2.6 and 2.10 above.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Many residual impacts associated with the project would be temporary in nature and the adverse impacts resulting from both the construction and operational phase of the project would be minimised and compensated for as far as reasonably practicable through a detailed consideration of development design. Having regard to the nature and scale of residual impacts any identified harm would be significantly outweighed by the environmental, safety, social and economic benefits to be delivered at national, regional and local levels, described within Chapter 5 of the Need for the Project (Application Document 7.1.)
General principles of assessment – Business Case		
4.5 NPSNN	Applications for road and rail projects (with the exception of those for SRFIs, for which the position is covered in paragraph 4.8 below) will normally be supported by a business case prepared in accordance with Treasury Green Book principles. This business case provides the basis for investment decisions on road and rail projects. The business case will normally be developed based on the Department's Transport Business Case guidance and WebTAG guidance. The economic case prepared for a transport business case will assess the economic, environmental and social impacts of a development. The information provided will be proportionate to the development. This information will be important for the Examining Authority and the Secretary of State's consideration of the adverse impacts and benefits of a proposed development. It is expected that NSIP Schemes brought forward through the development consent order process by virtue of Section 35 of the Planning Act 2008, should also meet this requirement.]	National Highways have developed a business case for the Project which aligns with the Government's requirements set out in HM Treasury's (2018) Green Book, as well as the Department of Transport's (DfT) Business Case guidance and TAG guidance. This business case has been shared with the Department for Transport. This is presented within the Economic Appraisal Report, part of Appendix D of the Combined Modelling and Appraisal Report (Application Document 7.7). The Report presents the anticipated economic benefits and disbenefits associated with the Project. The economic case for the Project, also prepared in accordance with the above guidance, is presented within the Economic Appraisal Report. Identified economic benefits include journey time savings, static productivity benefits, journey time reliability benefits and vehicle operating cost savings, while disbenefits include road user charges, and delays during construction and planned maintenance periods. When account is taken of £452 million of disbenefits of the Project, the total net benefits of the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Project are calculated to be approximately **£4,200 million**, which exceed the net costs of £2,877 million.
Local Transport Model		
4.6 NPSNN	Applications for road and rail projects should usually be supported by a local transport model to provide sufficiently accurate detail of the impacts of a project. The modelling will usually include national level factors around the key drivers of transport demand such as economic growth, demographic change, travel costs and labour market participation, as well as local factors. The Examining Authority and the Secretary of State do not need to be concerned with the national methodology and national assumptions around the key drivers of transport demand. We do encourage an assessment of the benefits and costs of Schemes under high and low growth scenarios, in addition to the core case. The modelling should be proportionate to the scale of the Scheme and include appropriate sensitivity analysis to consider the impact of uncertainty on project impacts.	A transport model has been produced in line with the Department of Transport's (DfT) guidelines. Details are provided in the Combined Modelling and Appraisal Report (Application Document 7.7). The Lower Thames Area Model (LTAM) has been developed as a simulation of the transport system in the Lower Thames area. The LTAM contains a detailed representation of the road network in the area and information on where people travelled to and from in an average month (March 2016). It uses an industry-recognised method of predicting future traffic flows and conditions, both with and without the new crossing, and shows the number of people choosing to travel by road and rail, the route they use now and the route they are forecast to use. This enables predictions to be made on how many vehicles would be using each part of the road network in the future and how long it would take to complete a journey. In addition to appraising the core scenario, the model has also been used to assess the impacts of alternative scenarios around the core assumptions and taken account of sensitivity analysis. These include high and low growth scenarios, in accordance with guidance in TAG Unit M4 (Department for Transport 2019).
4.9	The Examining Authority should only recommend, and the Secretary of State should only impose, requirements in relation to a development consent, that are necessary, relevant to	The Development Consent Order (DCO) (Application Document 3.1) includes proposed Requirements for the Project.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	planning, relevant to the development to be consented, enforceable, precise, and reasonable in all other respects. Guidance on the use of planning conditions or any successor to it, should be taken into account where requirements are proposed.	The Explanatory Memorandum to the Development Consent Order (Application Document 3.2) explains the purpose and effect of each provision in the draft DCO, including the requirements. In accordance with Planning Inspectorate NSIP Advice Note 15, all of the environmental mitigation required and associated with the Project, are secured under the DCO Requirements (see the Register of Environmental Actions and Commitments (REAC) (Application Document 6.3). These measures (which will fall within the Oder Limits) are clearly capable of being delivered. The Requirements (which have been informed in part by the extensive stakeholder consultation and the conclusions within the ES) are precise, enforceable, necessary, relevant to the development, relevant to planning and reasonable in all other respects.
4.10	Planning obligations should only be sought where they are necessary to make the development acceptable in planning terms, directly related to the proposed development and fairly and reasonably related in scale and kind to the development.	The Applicant has made appropriate proposals for Section 106 Agreements or equivalent legal agreements [**Document References 9.164 (2) to 9.169 (2)**] to address officer support contributions. The following, that were previously proposed to be part of the Section 106 Agreements, have now been secured through the Stakeholder Actions and Commitments Register [**Document Reference 7.21 (7)**]: • Community fund • Skills education and employment
4.11 – 4.14	This NPS deals predominantly with linear infrastructure – road and rail development. These differ from some of the other types of infrastructure covered by the Planning Act for several reasons:	Responses provided in response to NPSNN Generic Impacts section in Table A.4 below.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	• These networks are designed to link together separate points. Consequently, benefits are heavily dependent on both the location of the network and the improvement to it. • Linear infrastructure is connected to a wider network, and any impacts from the development will have an effect on pre-existing sections of the network. • Improvements to infrastructure are often connected to pre-existing sections of the network. Where relevant, this may minimise the total impact of development, but may place some limits on the opportunity for alternatives. In considering applications for linear infrastructure, decision-makers will need to bear in mind the specific conditions under which such developments must be designed. The generic impacts section of this NPS has been written to take these differences into account. This NPS does not identify locations at which development of the road and rail networks should be brought forward. However, the road and rail networks provide access for people, business and goods between places and so the location of development will usually be determined by economic activity and population and the location of existing transport networks. 4.11 to 4.13 do not apply to strategic rail freight interchanges.	
Environmental Impact Assessment		
4.15 NPSNN	All proposals for projects that are subject to the European Union's Environmental Impact Assessment (EIA) Directive and are likely to have significant effects on the environment, must be accompanied by an environmental statement (ES),	The Project Application includes an Environmental Statement (Application Document 6.1) prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI No. 572). The ES is the final report for the EIA that has been carried out for the Project. The EIA has influenced the development of the Project design. The principal

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	describing the aspects of the environment likely to be significantly affected by the project.	purpose of the Environmental Statement is to provide information that the Planning Inspectorate needs about the likely significant effects of the Project on the environment to make a well-informed recommendation to the Secretary of State on whether or not to grant a Development Consent Order (DCO). The ES also provides the same information to other interested parties who wish to participate in the statutory decision-making process.
4.16 NPSNN	When considering significant cumulative effects, any environmental statement should provide information on how the effects of the Applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been granted, as well as those already in existence).	Chapter 16: Cumulative Effects Assessment of the Environmental Statement (ES) (Application Document 6.1) sets out the how the effects of the Project would combine and interact with the effects of other developments. The assessment provides a summary of reasonably foreseeable developments identified as having the potential for cumulative effects with the Project, broken down into developments having an impact during the construction phase and those during the operational phase of the Project. The intra-project cumulative effects have been assessed and reported in Chapters 5-15 of the Environmental Statement (Application Document 6.1).
4.17 NPSNN	The Examining Authority should consider how significant cumulative effects and the interrelationship between effects might as a whole affect the environment, even though they may be acceptable when considered on an individual basis with mitigation measures in place.	Chapter 16: Cumulative Effects Assessment of the Environmental Statement (ES) (Application Document 6.1) sets out how the effects of the Project would combine and interact with the effects of other developments. The assessment provides a summary of reasonably foreseeable developments identified as having the potential for cumulative effects with the Project, broken down into those developments having an impact during the construction phase and those during the operational phase. The cumulative effects assessment considers the combination of activities associated with the Project

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		together with other development projects. For example, impacts caused by the Project may be exacerbated by the activities from other major projects nearby or non-significant individual impacts at different sites collectively may give rise to an overall significant effect in the region. In-combination effects assessment considers effects that could arise from the accumulation of different impacts due to the Project at a specific location. For example, construction noise and visual intrusion affecting a single receptor – individually these may not be significant, but the accumulation of different effects may give rise to an overall significant effect. The assessment has not identified a need for additional mitigation further to that already set out in Chapters 5 to 15 of the ES (Application Document 6.1).
4.18 - 4.19 NPSNN	In some instances it may not be possible at the time of the application for development consent for all aspects of the proposal to have been settled in precise detail. Where this is the case, the applicant should explain in its application which elements of the proposal have yet to be finalised, and the reasons why this is the case. Where some details are still to be finalised, applicants are advised to set out in the environmental statement, to the best of their knowledge, what the maximum extent of the proposed development may be (for example in terms of site area) and assess the potential adverse effects which the project could have to ensure that the impacts of the project as it may be constructed have been properly assessed.	Details of the Project design are shown on the Works Plans (Application Document 2.6) and Engineering Section Drawings (Application Document 2.9). Limits of deviation (LoD) for the Project would be included within the Development Consent Order (DCO) Application to represent an 'envelope' within which the tunnel and highway works would be constructed. The LoD define the maximum extent to which the main elements of the Project can deviate spatially, both horizontally (in plan) and vertically (in elevation). Chapter 12 of the Introduction to the Application (Application Document 1.3) sets out the justification for the approach to defining the LoD. LoD are included to provide the required degree of flexibility necessary to accommodate the final detailed design of the Project. The precise design would be further finessed prior to construction, however, that design development would take place within the constraints defined by the DCO, the LoD and by the

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		Rochdale Envelope. The Control Plan (Plate 1.2 within the CoCP (Application Document 6.3)) provides the framework of constraints and other controls that will be placed on the Contractor, so that the works remain in accordance with the Rochdale Envelope. Further information on LoD can be found in Chapter 2: Project Description of the Environmental Statement (ES) (Application Document 6.1). The ES (Application Document 6.1) and the assessments within it are based on the works proposed in the DCO Application and the maximum area of land anticipated as likely to be required, taking into account the proposed LoD for the Project and the flexibility of detailed design provided for in the DCO. The assessments therefore take into consideration what can be regarded as a realistic 'worst case' assessment of the impacts associated with the Project. At this stage, all the land included within the Order Limits is considered necessary to enable delivery of the Project, as explained in the Statement of Reasons (Application Document 4.1).
4.20 NPSNN	Should the Secretary of State decide to grant development consent for an application where details are still to be finalised, this will need to be reflected in appropriate development consent requirements in the development consent order. If development consent is granted for a proposal and at a later stage the applicant wishes for technical or commercial reasons to construct it in such a way that it is outside the terms of what has been consented, for example because its extent will be greater than has been provided for in terms of the consent, it will be necessary to apply for a change to be made to the development consent. The application to change the consent	It is necessary to maintain some flexibility to continue design development after consent is granted. The reasons for this include: • enabling the Project to adapt to changes and improvements. • to respond to site conditions at the time of construction (e.g. other committed developments). • to development designs and methodologies based upon more detailed site and geological information. The Requirements contained in the Development Consent Order (DCO) (Application Document 3.1) therefore, make provision for

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	may need to be accompanied by environmental information to supplement that which was included in the original environmental statement.	the detailed design of the Project in general accordance with the Works Plans (Application Document 2.6) and Engineering Section Drawings (Application Document 2.9), subject to any variation agreed in writing by the Secretary of State on the basis that the changes would not give rise to any materially new or different adverse environmental effect than those reported within the Environmental Statement (Application Document 6.1).
4.21 NPSNN	In cases where the EIA Directive does not apply to a project, and an environmental statement is not therefore required, the applicant should instead provide information proportionate to the project on the likely environmental, social and economic effects.	The EIA Directive is applicable to this Project and, therefore, an Environmental Statement (Application Document 6.1) has been prepared to support this Development Consent Order (DCO) Application.
Habitats Regulations Assessment		
4.22 NPSNN	The applicant should seek the advice of Natural England and, where appropriate, for cross-boundary impacts, Natural Resources Wales and Scottish Natural Heritage to ensure that impacts on European sites in Wales and Scotland are adequately considered.	A Habitats Regulations Assessment (HRA) (Application Document 6.5), including an HRA Screening and Appropriate Assessment, has been undertaken for the Project. Consultation with Natural England has been carried out through the Project's optioneering, environmental scoping and the HRA development stages. Feedback received through the engagement with Natural England has informed the scope and content of the HRA. A complete record of correspondence with Natural England in relation to the HRA development is provided in Appendix B to the HRA. No potential for cross boundary impacts has been identified throughout this process.
4.23 NPSNN	Applicants are required to provide sufficient information with their applications for development consent to enable the Secretary of State to carry out an Appropriate Assessment if required.	In accordance with the Conservation of Habitats and Species Regulations 2017, a Habitats Regulations Assessment (HRA) Screening Report (Application Document 6.5) has been prepared setting out the assessment of likely significant effects on European sites as a result of the Project. This document

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		comprises the Applicant's information to inform the Habitats Regulations Assessment (HRA). It has been drafted to provide the Secretary of State the information necessary to undertake an appropriate assessment (as per Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 (as amended)) as part of the determination process for the Development Consent Order (DCO). An appropriate assessment has therefore been carried out.
4.24 NPSNN	If a proposed national network development makes it impossible to rule out an adverse effect on the integrity of a European site, it is possible to apply for derogation from the Habitats Directive, subject to the proposal meeting three tests.	A Habitats Regulations Assessment (HRA) Stage 2 Appropriate Assessment concludes, beyond reasonable scientific doubt, that the Project will not adversely affect the integrity of any European site during its construction or operational phases, either alone or in combination with other plans or projects. Because the Stage 2 Appropriate Assessment concluded there would be no adverse effects on the integrity of European sites, there is no requirement for consideration of derogation at Stage 3 HRA. In the event that the competent authority does not agree with the conclusions of the report, there would be no need to employ Stage 3 derogation of the HRA process because (as identified in Section 1.7 of the report) a mitigation measure has been assessed on a 'without prejudice basis'. Natural England have agreed with this measure and are satisfied that the integrity of European sites would not be adversely affected by the Project.
4.25 NPSNN	Where a development may negatively affect any priority habitat or species on a site for which they are a protected feature, any Imperative Reasons of Overriding Public Interest (IROPI) case would need to be established solely on one or more of the	The Habitats Regulations Assessment (HRA) Appropriate Assessment Report (Application Document 6.5) referred to in response to paragraphs 4.22 and 4.23 above, concludes that the Project would not have an adverse effect on priority habitats or

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	grounds relating to human health, public safety or beneficial consequences of primary importance to the environment.	species on a site for which they are a protected features and this paragraph is, therefore, not applicable. It would, therefore, not be necessary to apply the 3 legal tests for derogation in this case as there would be no adverse impacts on the integrity of the above sites.
Alternatives		
4.26 NPSNN	Applicants should comply with all legal requirements and any policy requirements set out in this NPS on the assessment of alternatives. In particular: • The EIA Directive requires projects with significant environmental effects to include an outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects. • There may also be other specific legal requirements for the consideration of alternatives, for example, under the Habitats and Water Framework Directives. • There may also be policy requirements in this NPS, for example the flood risks sequential test and the assessment of alternatives for developments in National Parks, the Broads and Areas of Outstanding Natural Beauty (AONB).	Chapter 3: Assessment of Reasonable Alternatives of the Environmental Statement (ES) (Application Document 6.1), sets out the main alternatives considered and how the preferred route option has been determined through the consideration of environmental effects. Chapter 5 of this Planning Statement: Project Evolution and Alternatives sets out the alternative options considered and how the preferred route option was determined. The EIA has been completed in compliance with the EIA Directive. The ES includes: 'a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed Project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'. Specific legal and policy requirements related to the individual environmental topics are considered within each topic chapter of the ES. In terms of other specific legal requirements for the consideration of alternatives, the following relevant documents are noted:

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		• A Habitats Regulations Assessment (HRA) (Application Document 6.5) including HRA Screening and Appropriate Assessment, has been undertaken for the Project, which confirms that a Stage 3 derogation is not required. There is therefore no applicable legal requirement under HRA to consider alternatives. • Appendix 14.7 of the ES sets out the Water Framework Directive (WFD) Assessment (Application Document 6.3) that supports the Project. • The Flood Risk Assessment (FRA) findings are summarised in Section 14.6 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) and detailed in full in Appendix 14.6 (Application Document 6.3) of the ES. The Project would fall partly within the Kent Downs AONB at its north-western extent to the west of the River Medway. Appendix F of this Statement has responded in detail to the consideration of alternatives to developing within the AONB.
4.27 NPSNN	All projects should be subject to an options appraisal. The appraisal should consider viable modal alternatives and may also consider other options (in light of the paragraphs 3.23 to 3.27 of this NPS). Where projects have been subject to full options appraisal in achieving their status within Road or Rail Investment Strategies or other appropriate policies or investment plans, option testing need not be considered by the examining authority or the decision maker. For national road and rail Schemes, proportionate option consideration of alternatives will have been undertaken as part of the investment decision making process. It is not necessary for the Examining Authority and the decision maker to reconsider this	Route optioneering in terms of corridor location, route and crossing type has been undertaken through several Project stages leading to the Preferred Route Announcement in April 2017. This also included an assessment into alternative modal options. Whilst the project has been subject to a full options appraisal for RIS, it is recognised that this does not obviate the need to comply with the legal and policy requirements set out within NPSNN paragraph 4.26 above. The route alternatives are reported within the following documents and summarised in Chapter 5: Project Evolution and Alternatives of this Planning Statement.

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	process, but they should be satisfied that this assessment has been undertaken.	In RIS 2, the DfT (2020) sets out the Government's expenditure priorities. RIS 2 has made a commitment to deliver the Lower Thames Crossing Project through the second Road Period (2020-2025).
Criteria for 'Good Design' for national network infrastructure		
4.28 NPSNN	Applicants should include design as an integral consideration from the outset of a proposal.	The preparation of a Project Design Report (Application Document 7.4) and Design Principles (Application Document 7.5) submitted as part of the DCO application has set out how design of the Project has been an integral part of the design development in line with the requirements of Design Manual for Roads and Bridges (DMRB) GG 103 (Highways England, 2019). As part of this process, following a review by Highways England's Design Review Panel (HEDRP; note that National Highways was formerly known as Highways England) of the Project in 2017, the high-level factors shaping the design decisions early-on in the process were set-out, with an explanation on how the design should respond to these in order to: • Achieve the right design for the Project and location (rather than a generic design that could apply to any road project anywhere) • Achieve the best outcome for local communities • Achieve the best outcome for the environment • Meet the technical requirements for construction and operation of the road • Make the experience of using the route safe and enjoyable • Make the Project the best it could be overall, consistent with the available budget. The Project Design Report (Application Document 7.4) sets out that following comments received on the draft documents the

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		design narrative has influenced both the design proposals and the Design Principles submitted for approval.
4.29 NPSNN	Visual appearance should be a key factor in considering the design of new infrastructure, as well as functionality, fitness for purpose, sustainability and cost. Applying "good design" to national network projects should therefore produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction, matched by an appearance that demonstrates good aesthetics as far as possible.	The Road to Good Design (Highways England, 2018) sets out the framework within which National Highways considers the application of good design to the strategic road network. The development of the design has considered these principles throughout as set out in the Project Design Report (Application Document 7.4). The future good design of the Project is secured via the Design Principles (Application Document 7.5). The preliminary design has been developed to be: • Landscape led: An emphasis placed on tailoring the design of the road and new landscape works to their context in order to fit more harmoniously within it. The design of architectural elements, such as overbridges, portals and operational buildings all aim to reflect the nature of their character area, while being recognisable as part of the wider Project. • Celebrate key moments, differences and thresholds: The designs for the Project are differentiated to draw attention to key moments of transition, 'to give people a sense of arrival, destination and threshold'. • Smarter by design: In seeking the best approach to design, collaborative working will be employed where design elements of the Project are multifunctional. Mitigation measures should meet a variety of environmental needs and engineering proposals and should enhance rather than detract from the local environment and be designed in a way that aligns with the aspirations of local communities and stakeholders. • Safe, resilient and easy to use: The Project should be designed and built to make the operation, management and maintenance as easy as possible and meet ambitious safety targets for 2041, in line with National Highways' strategic goals on safety. The proposals are to be designed to be resilient to flood risk

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		and climate change and represent the best value over the whole life of the Project. In addition, the Project should seek to minimise adverse health and environmental impacts and meet the Department for Transport's (DfT's) target for construction cost, as well as helping the Government meet the requirements of the 25 Year Environment Plan (HM Government, 2018).
4.30 NPSNN	It is acknowledged however, that given the nature of much national network infrastructure development, particularly SRFIs, there may be a limit on the extent to which it can contribute to the enhancement of the quality of the area.	Response provided below (in response to paragraph 4.31).
4.31 NPSNN	A good design should meet the principal objectives of the Scheme by eliminating or substantially mitigating the identified problems by improving operational conditions and simultaneously minimising adverse impacts. It should also mitigate any existing adverse impacts wherever possible, for example, in relation to safety or the environment. A good design will also be one that sustains the improvements to operational efficiency for as many years as is practicable, taking into account capital cost, economics and environmental impacts.	The Lower Thames Crossing has been designed to meet the Scheme Objectives (as set out in the Need for the Project (Application Document 7.1) and Section 2.3 of Chapter 3 of this Planning Statement. The Project Design Report (Application Document 7.4) sets out how the Project complies with National Highways' 10 principles of Good Design (National Highways, 2018) and details the design standards to which the Project has been designed to meet and sets out the performance of the Project against the Scheme Objectives. The Project sits within a complex road network that faces a number of existing capacity challenges, many of which are unrelated to the congested Dartford Crossing. The Project design therefore seeks to mitigate existing adverse impacts and sustain improvements to operational efficiency through the various measures described below. The Project Road has been designed to be part of the strategic road network and to be an 'all-purpose trunk road' with a minimal number of intersections and a 70mph speed restriction. For safety reasons, walkers, cyclists, horse-riders and slow-moving vehicles would be prohibited from using it and the Project design will

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		therefore relieve the congested Dartford Crossing and approach roads, improving their performance by providing free flowing, north-south capacity. The faster and more reliable journeys and improved accessibility would boost the productivity of businesses in the Lower Thames area and wider region through providing enhanced connectivity and cross-river economic and boosting employment and increasing inward investment. The design seeks to combine mitigations as efficiently as practicable to provide maximum benefit, for example through using required utilities clearances in areas of tree planting as 'woodland rides' for better access for maintenance and movement. A Value for Money assessment has been carried out. Account has been taken of Project costs, monetised impacts and benefits, and of other information on impacts and benefits that have been considered in a qualitative manner, to assess the value for money of the Project. Based on the categories in the Department for Transport's value for money framework, the Project has been assessed as providing value for money. Sensitivity tests have been undertaken to assess the sensitivity of the Project's monetised benefits, costs and revenues to different traffic growth, costs and other scenarios. The results of these tests are that the Adjusted Benefit Cost Ratio (BCR) is 1.23 when the appraisal parameters in the forthcoming TAG data book v1.19FC were applied to the appraisal. This rises to 1.66 (Scenario 1) when the appraisal period is extended to 100 years (paragraph 12.3.5 of Appendix D: Economic Appraisal Package of the ComMA (Application Document 7.7). The Project has been developed to be landscape led, to support the recovery of nature and to avoid or minimise significant effects

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		on the environment. During the design process further measures have been incorporated into the Project to mitigate adverse impacts that would arise and that cannot be avoided. Some of the measures adopted include landscaping, noise mitigation measures, and the provision of green infrastructure along the Project route including a number of green bridges. The Project would create a number of new areas of ecological habitat, providing mitigation or compensation for the impacts on existing areas. Two new parks would be created including Tilbury Fields to the to the west of the northern tunnel entrance, and Chalk Park, to the south of the River Thames. With regards to resilience, as outlined in Section 3.6 of the Project Design Report (Application Document 7.4) the Project design has taken into account need to avoid the operational challenges of the Dartford Crossing and has the identified potential effects of climate change and incorporates measures to ensure capacity for climate change resilience within the design for these eventualities. Climate change considerations have been assessed for the construction of the Project as well as for 60 years of its operation, including for operational vulnerability.
4.33 NPSNN	The applicant should therefore take into account, as far as possible, both functionality (including fitness for purpose and sustainability) and aesthetics (including the Scheme's contribution to the quality of the area in which it would be located). Applicants will want to consider the role of technology in delivering new national networks projects. The use of professional, independent advice on the design aspects of a proposal should be considered, to ensure good design principles are embedded into infrastructure proposals.	The Applicant recognises that developing good design, including good landscape design, is essential. In seeking good quality design in all areas within the physical constraints associated with a highway infrastructure project of this nature, the following strategies have been developed to ensure design quality: • Developing designs in an integrated team • Public consultation and stakeholder engagement • Independent design review • Incorporating flexibility for future development

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		At the same time, the functional requirements of the Project, as a highways infrastructure project, are recognised, led by relevant technical standard such as the Design Manual for Roads and Bridges (DMRB) (Highways England, 2018) in setting out parameters for new road design. Compliance with these requirements would ensure the Project is fit for purpose. The use of professional, independent advice on the design aspects of the Project has been undertaken through a National Highways England Design Review Panel (NHDRP), established to review revised standards and guidance and to comment on individual schemes. The Project designs have been reviewed on five occasions by the NHDRP over the course of its development at the following stages, with a brief summary of the outcome of the process at each stage provided below: Review of emerging proposals (2017) • The design of individual structures should be part of the overall consideration of how the scheme responds to the landscape • Footbridges should be aesthetically pleasing from the viewpoint of the user travelling across it and the driver travelling below. • Recommend developing an approach to viaducts that enhances local character rather than just mitigation. • The Project responded by securing the input from architects and landscape architects in the design process for structures throughout the project. Workshop review of the Project's Draft Design Narrative (2018) • Pleased to see the architect and landscape architect leading the strong inception of an integrated design strategy

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		• Recommend considering the height of the viaducts and other fixed structures to animate the viaduct. • Commend the approach to minimising the amount of roadside hardware • Allowing design teams to challenge traditional Highways England standards and procedures • The Project reviewed the height and design of structures within the landscape context to integrate the Project into the landscape. Review of the Statutory Consultation Proposals (2019) • Strongly support the Project Narrative in promoting a contextually responsive, integrated design strategy across the Project. • The scale and type of Green Infrastructure cannot be retrofitted but conceived alongside and intertwined with the transport functions of the Project. • Encourage the Project Team to go beyond standard practice, pursuing innovative solutions to set exemplars for future projects. • Encourage the Project Team to reduce clutter and streamline design. • Mardyke Viaduct: Support many of the changes put forward. • The measures taken by the Project were supported by the Panel and the Applicant continued to challenge the established standards and explored opportunities for innovation. Review of the Design Refinement Consultation Proposals (June 2020)

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		A summary of the Design Council's response is provided below: 'The project has significantly developed since Design Council first reviewed the scheme in 2017. Throughout the project's development, the design has been a driving factor in shaping and delivering the team's vision of a highway which responds to its settings and provides benefit to the local communities. The current proposal displays a strong character along the route, including structures, layout and architecture which respond to the surrounding landscape. However, there exist further opportunities to strengthen this distinctiveness and identity through refinements to the detailed design of the highways, architecture, and landscape'. The Panels comments reflect the efforts by the Applicant to improve the quality of the design to deliver a high quality project. Review of the Local Refinement Consultation May 2022 A summary of the Design Council's response is provided below: In relation to the South portal design: 'The current proposal is driven by skilled design that has led to the creation of structures, layout, and architecture that responds to the feedback from consultation with communities and stakeholders. We were again impressed by the calibre of holistic design and detail shown by the fusion of architecture, engineering, and landscape. There is much to admire in the progress of such a nationally significant infrastructure project.' In relation to the revisions for the A13/A122/ A1089 junction ''The scale of the structures at the junctions sit well within the wider context – the larger junctions respond to the landscape form. The design team have responded to the specific form and requirement of structures by considering scale, alignment, span, complexity,

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		and constructability. We advise the design team to continue to design structures at junctions in a way that is appropriate to the context and to not be afraid of implementing large-scale designs.' In regard to the revised design at Tilbury Fields and the North Portal the panel commented: 'The design approach to Tilbury Fields to use excess fill from tunnel and road construction to create landscape forms supports flood management and extends ecological habitats. The height of the mounds also creates views of the river Thames and back north towards Orsett Fen; We recommend adding a clear base to the mounds through gabion walls and taking a more architectural approach using structural elements as much as planting and landform. Further, we recommend exploring the concept of degradation or maintenance for these mounds, where the mounds are 'allowed' to deteriorate based on the environmental conditions at Tilbury. The current proposal is driven by skilled design that has led to the creation of structures, layout, and architecture that responds to the feedback from consultation with communities and stakeholders.' For the Mardyke and Orsett Fen viaduct structures, the Panel said: We support the changes to the structures since the previous review and are impressed by the well-considered design options chosen. The use of weathering steel in the bridges and viaducts (including the Mardyke viaduct) creates elegant structures that will require little and infrequent maintenance. The Design Panel has endorsed the quality of the design of this application for the A122 project. A full consideration of NHDRP responses is considered in the Project Design Report (Application Document 7.4).

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4.34 NPSNN	Whilst the applicant may only have limited choice in the physical appearance of some national networks infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting and design measures relative to existing landscape and historical character and function, landscape permeability, landform and vegetation.	Environmental considerations have influenced the Project throughout the design development process, from early route options assessment through to refinement of the Project design. The overarching design context for the Project is for it to be subservient to its landscape context and for the existing and proposed landscape to have a higher visual hierarchy than the road and the structures that support it. The Design Principles (Application Document 7.5) establishes a consistent set of design parameters for the project which seek to prevent, avoid, reduce or offset significant adverse environmental effects on environmental receptors, and to seek beneficial effects. This approach aligns with National Highways' 10 Design Principles of Good Road Design (Highways England, 2018) which takes a context-based design response to integrate structures and is key to ensuring a positive contextual intervention. As part of this strategy, certain buildings, bridges and structures where design and appearance are of particular importance have been identified as 'Signature Structures' that are considered important in enhancing the aesthetic quality of the road and in building a legacy for the future. These structures include the North and South Portals and a number of viaducts, bridges and footbridges along the route alignment, in addition to bridges within the Kent Downs AONB. Within the designated AONB, bridge designs are to be suitably located and to demonstrate an exceptional level of quality experienced by both users of the A2/M2 and those moving within the AONB. The preliminary design proposals have been in part influenced by the landscape of the AONB and the guidance in place on the principles of exterior colour design to be applied in the area. This has been carried on through the Project to establish consistency

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		along the route which has been translated into self-finished raw materials (e.g. not painted) in ensuring that proposals contribute to the conservation and enhancement of the natural, built and historic environment, while minimising waste and the need for new materials.
4.35 NPSNN	Applicants should be able to demonstrate in their application how the design process was conducted and how the proposed design evolved. Where a number of different designs were considered, applicants should set out the reasons why the favoured choice has been selected.	National Highways have developed the Project design with input from architects, landscape architects, town planners and highway, geotechnical and structural engineers. Environmental specialists have undertaken the EIA. The interplay between these specialist disciplines has been integral to achieving good design, along with the issues raised through consultation and engagement. The landscape, architectural and engineering design solutions for the Project have developed concurrently following Statutory Consultation in 2018 through a collaborative and iterative design process between the technical disciplines over a two-year period. As an overarching principle, the work of the Integrated Project Team has sought to prevent, avoid, reduce or off-set adverse environmental effects and to seek beneficial effects, including embedded environmental mitigation measures within the design proposals. The Project Design Report (Application Document 7.4) submitted with this Development Consent Order (DCO) application sets out in detail the design development that has taken place and the alternatives considered through the engagement undertaken with National Highways Design Review Panel (NHDRP) in reviewing design proposals through four stages of the Project's development. Through the design development process, the Project has sought to engage with the 'host' local planning authorities and

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		stakeholders to take account of their views and to gain a full understanding of local constraints and opportunities. At the same time detailed discussions have been held with the main landowners and tenants that would be impacted by the Project, both on the design proposals and to receive feedback on integration and reinstatement proposals. The Applicant has also engaged in five rounds of public consultation.
Climate Change Adaptation		
4.36 – 4.37 NPSNN	Response considered unnecessary as this provides a statement on the Secretary of State's requirement to have regard to climate change and also contains general background text on climate change.	No response required (Carbon: 5.16-5.19; Flood Risk: 5.90-5.115)
4.38 NPSNN	Adaptation is therefore necessary to deal with the potential impacts of these changes that are already happening. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the provision of green infrastructure.	Chapter 15: Climate of the Environmental Statement (ES) (Application Document 6.1) assesses the potential climate impacts of the construction and operation of the Project and provides details of the design and mitigation measures proposed during the operational and construction phases to address these impacts. A series of mitigation and adaptation measures to address the potential impacts associated with climate change events have been considered, based on the latest UK Climate Change Risk Assessment (Department for Environment, Food and Rural Affairs (Defra), 2017) and in consultation with the relevant bodies. In summary, these can be described, as follows: • Flood alleviation measures have been considered as part of the drainage design to reduce the vulnerability of the Project to potential flooding events as a result of climate change. For example, Sustainable Drainage Systems (SuDs) would be implemented where appropriate and runoff would be conveyed

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		via filter drains and attenuation ponds. The climate change allowance for SuDS features as part of the Project design would be 40% (as an addition to a 100-year storm event). • The Project has been designed to accommodate a 1 in 100-year flood event (with a climate change allowance of 50% added) without flooding the carriageway and tunnel • The Project drainage strategy takes into account the potential effects of climate change. • Where the Project ties in with the existing A2/M2 and M25 highways, the existing drainage infrastructure is to be enlarged to accommodate the new catchments in accordance with current design guidance, with appropriate allowances for climate change and in line with Lead Local Flood Authorities (LLFA) requirements. Specifically, the enlargement of existing M25 drainage infrastructure would achieve a reduction in existing runoff rates of approximately 50%. • To define future baseline flood risk to the Project climate change allowances have been selected in consultation with the Environment Agency. Further details are provided in Appendix 14.6: Flood Risk Assessment (FRA) (Application Document 6.3) of the ES. The latest climate change allowances (UKCP18) (Met Office, 2019) have been applied to the FRA and the surface water drainage design. • Through undertaking a detailed FRA, the vertical alignment of the carriageway, the design of watercourse crossings and protection measures for the tunnel portals, all include appropriate allowance for climate change effects on river flows and water levels in the Thames Estuary. Climate change

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		effects on groundwater resources have also been considered in the design of the Project. • The design criteria for all new pipelines has been that there should be no surcharge for the 1 in 1-year storm and no flooding for the 1 in 5-year storm, including an allowance of 20% on peak rainfall intensity for climate change. • Storage volumes for balancing ponds and infiltration have been based on the worst 1 in 100-year storm event. To account for the effects of climate change, storage volumes have been calculated on the basis that there is a 20% increase in peak rainfall intensity. Full details of the surface water drainage proposals for the Project are dealt with in Part 7 of Appendix 14.6 (Application Document 6.3) of the ES. Figure 2.4: Environmental Masterplan (Application Document 6.2) of the ES identifies the embedded environmental mitigation measures for the Project including proposals affecting the functionality and connectivity of the Green Infrastructure network.
4.39 NPSNN	The Government has published a set of UK Climate Projections and has developed a statutory National Adaptation Programme.64 In addition, the Government's Adaptation Reporting Power65 will invite reporting authorities (a defined list of public bodies and statutory undertakers, including Highways Agency, Network Rail and the Office of Rail Regulation) to build on their climate change risk assessments and report on progress implementing adaptation actions.	See responses to paragraphs 4.40 – 4.46.
4.40 NPSNN	New national networks infrastructure will be typically long-term investments which will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the impacts of climate change when	Chapter 15: Climate of the Environmental Statement (ES) (Application Document 6.1) states that the Project has been designed to be resilient to impacts from weather events and climatic conditions. The Project design and proposed mitigation

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	planning location, design, build and operation. Any accompanying environment statement should set out how the proposal will take account of the projected impacts of climate change.	measures have considered any potentially critical features of the design which may be seriously affected by climate change beyond what has been projected in the UK Climate Projections 2018 (UKCP18). As a result, the ES predicts that there would be no significant adverse impacts upon the Project's receptors. This shows that for the South East and Central Southern district region, there is a projected increase in annual temperatures and seasonal rainfall, with wetter winters and drier summers expected. The mitigation requirements, which respond to these future scenarios, are set out in response to NPSNN paragraph 4.38 above and are addressed within Chapter 15. Section 15.5: Project Design and Mitigation and Section 15.6: Assessment of Impacts in Chapter 15 of the ES have considered how the Project design takes account of the updated UK Climate Projections during the estimated lifetime of the Project. The ES has set out how the Project would take account of the projected impacts of climate change. Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) of the ES has detailed the flood risk impacts having regard to climate change. The vulnerability of the Project to climate change has been reduced through the drainage design which has reduced the risk of flooding elsewhere through the use attenuation features as shown in Figure 2.4: Environmental Masterplan (Application Document 6.2) of the ES.
4.41 - 4.42 NPSNN	Where transport infrastructure has safety-critical elements and the design life of the asset is 60 years or greater, the applicant should apply the UK Climate Projections 2009 (UKCP09) high emissions scenario (high impact, low likelihood) against the 2080 projections at the 50% probability level.	New climate projections (UKCP18) (Met Office, 2019) have been released since the publication of the NPSNN. Sections 15.3 and15.6 of ES Chapter 15: Climate (Application Document 6.1) demonstrate the application of the updated UKCP18 Representative Concentration Pathway (RCP) 8.5

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	The applicant should take into account the potential impacts of climate change using the latest UK Climate Projections available at the time and ensure any environment statement that is prepared identifies appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure.	scenario against the 2080 projections at the 50% probability level. RCP8.5 is the most similar to the high emissions scenario in UKCP09. ES Appendix 4.2 and 4.3 covers major accidents and disasters. Section 15.3 and Section 15.6 of Chapter 15: Climate of the Environmental Statement (Application Document 6.1) demonstrate the application of the updated UK Climate Projections (UKCP18) (Met Office, 2019) during the estimated lifetime of the Project. Section 15.5 presents the mitigation and adaptation measures related to the vulnerability of the Project to climate change. The findings of this assessment are referenced in response to paragraph 4.40 above.
4.43 NPSNN	The applicant should demonstrate that there are no critical features of the design of new national networks infrastructure which may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections. Any potential critical features should be assessed taking account of the latest credible scientific evidence on, for example, sea level rise (e.g. by referring to additional maximum credible scenarios such as from the Intergovernmental Panel on Climate Change or Environment Agency) and on the basis that necessary action can be taken to ensure the operation of the infrastructure over its estimated lifetime through potential further mitigation or adaptation.	Chapter 15: Climate of the Environmental Statement (Application Document 6.1) states that the Project has been designed to be resilient to impacts from weather events and climatic conditions. The Project design and proposed mitigation measures have considered any potentially critical features of the design which may be seriously affected by climate change beyond what has been projected in the UK Climate Projections 2018 (UKCP18). Factors considered include: • overheating of tunnel and electrical equipment • localised flooding from intense rainfall • accidents associated with overheated vehicles / smoke drift from wild fires and • thermal contraction of hard surfaces Mitigation has been identified to ensure the Project is resilient to climate change in Section 15. The UK Climate Change Risk Assessment 2017 (Defra, 2017) and UKCP18 data outputs (Met

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Office, 2019) have been used to identify potential climate hazards. Potential climate change impacts have been reviewed and an assessment of their potential consequence and likelihood of occurrence undertaken. Based on the mitigation identified, UKCP18, information from other environmental disciplines and details on the Project's design, none of the potential impacts identified for the construction and operational phases are considered to have significant effects.
4.44 NPSNN	Any adaptation measures should be based on the latest set of UK Climate Projections, the Government's national Climate Change Risk Assessment and consultation with statutory consultation bodies. Any adaptation measures must themselves also be assessed as part of any environmental impact assessment and included in the environment statement, which should set out how and where such measures are proposed to be secured.	Chapter 15: Climate of the Environmental Statement (Application Document 6.1) has considered the identification and implementation of any adaptation measures incorporated into the Project design. The embedded adaptation measures have been based on the latest UK Climate Change Risk Assessment (Department for Environment, Food and Rural Affairs, 2017). The assessments undertaken have had regard to the UK Climate Change Risk Assessment 2022, Flood risk assessments: climate change allowances. (Environment Agency, 2021a) amongst various other standards and guidance documents. Climate change adaption measures have been shaped by consultation and engagement with statutory bodies such as the Environment Agency. Please refer to the Statement of Engagement (Application Document 5.2) and Consultation Report (Application Document 5.0) for more information. The Design Principles, Environmental Masterplan, CoCP and REAC, all form part of the Project control plan. The control plan is the framework for mitigating, monitoring and controlling the effects of the Project. It is made up of a series of 'control documents' which present the mitigation measures identified in the application that must be implemented during design,

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		construction and operation to reduce the adverse effects of the Project
4.45 NPSNN	If any proposed adaptation measures themselves give rise to consequential impacts the Secretary of State should consider the impact in relation to the application as a whole and the impacts guidance set out in this part of this NPS (e.g. on flooding, water resources, biodiversity, landscape and coastal change).	The assessment of the vulnerability of the Project to climate change contained within ES Chapter 15: Climate Change (Application Document 6.1), began with a review of the potential impacts and was followed by an assessment of their potential consequence and likelihood of occurrence, taking into account the measures incorporated into the design of the Project. Table 15.19 within ES Chapter 15 presents a summary of the assessment and shows that there would be no likely significant effects from climate change on the Project's receptors.
4.46 NPSNN	Adaptation measures can be required to be implemented at the time of construction where necessary and appropriate to do so.	A suite of flood resilience measures will be applied during construction and are specified within the REAC which forms part of the Code of Construction Practice Document (Application Document 6.3). This document makes clear the commitments that are being made to address flood risk issues during construction. REAC Clause RDWE023 in particular states: "Incorporation of a suite of flood alleviation measures such as altering road geometry to set the vertical alignment of carriageways above the design flood level, inclusive of freeboard and allowance for climate change resilience, including provision for flood bunds or walls to protect areas where the vertical alignment of the road is lower than the design flood level, to make the development safe from flooding over its design lifetime in line with the requirements of DMRB LA 113." The timing at which measures such as flood storage are implemented during operation is also significant. The majority of would be built into the Project from the outset (including constructing roads on embankments and viaducts and ensuring

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		road surfaces are above flood protection level etc). These design elements are incorporated within the Design Principals Document (Application Document 7.5). These measures have been based on the latest UK Climate Change Risk Assessment (Department for Environment, Food and Rural Affairs, 2017) and also in consultation with the relevant bodies listed in Chapter 4: EIA Methodology of the Environmental Statement (Application Document 6.1). Where appropriate, adaptation measures agreed with the relevant consultation bodies have been embedded within the Project's design.
4.47 NPSNN	Response considered unnecessary as this provides a statement on the Secretary of State's consideration of adaptation measures that could be implemented should the need arise, rather than from the outset.	No response required.
Pollution control and other environmental protection regimes		
4.48 NPSNN	Issues relating to discharges or emissions from a proposed project which affect air quality, water quality, land quality and the marine environment, or which include noise and vibration, may be subject to separate regulation under the pollution control framework or other consenting and licensing regimes. Relevant permissions will need to be obtained for any activities within the development that are regulated under those regimes before the activities can be operated.	Whilst the Development Consent Order (DCO (Application Document 3.1) would provide development consent for the works associated with the Project as well as other consents and powers, the DCO application has been supplemented by a number of other permits, consents and agreements that need to be sought separately from the DCO. These are set out in Appendix A of the Consents and Agreements Position Statement (Application Document 3.3) and cover water abstraction and impoundment, noise, vibration, the environmental impacts of construction works, a River Works Licence and Self-Service Marine Licence.
4.49 NPSNN	The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest. It plays a	Response provided below. (Paragraphs 5.81-5.89)

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	key role in protecting and improving the natural environment, public health and safety, and amenity, for example by attaching requirements to allow developments which would otherwise not be environmentally acceptable to proceed, and preventing harmful development which cannot be made acceptable even through requirements. Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health. Environmental Permits cannot control impacts from sources outside the facility's boundary.	
4.50 NPSNN	In deciding an application, the Examining Authority and the Secretary of State should focus on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves. They should assess the potential impacts of processes, emissions or discharges to inform decision making, but should work on the assumption that in terms of the control and enforcement, the relevant pollution control regime will be properly applied and enforced. Decisions under the Planning Act should complement but not duplicate those taken under the relevant pollution control regime.	Chapter 4 of this Statement demonstrates the extent to which the Project is an acceptable use of the land having regard to the environmental effects identified and assessed within the Environmental Statement (Application Document 6.1). Details of other regulatory consents to be sought for the Project supplemental to those set out in the Development Consent Order (DCO) (Application Document 3.1) are identified in the Consents and Agreements Position Statement (Application Document 3.3).
4.51 NPSNN	These considerations apply in an analogous way to other environmental regulatory regimes, including those on land drainage and flood defence and biodiversity.	Responses provided below. (Paragraphs 5.90-5.115)
4.52 NPSNN	There is a statutory duty on applicants to consult the Marine Management Organisation (MMO) on nationally significant	The Marine Management Organisation (MMO) has been engaged throughout the EIA process, with discussions on a range of issues

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	projects which would affect, or would be likely to affect, any relevant marine areas as defined in the Planning Act (as amended by section 23 of the Marine and Coastal Access Act 2009).	affecting the River Thames and the foreshore arising from the Project. This has included the marine monitoring and modelling programme, the need for Marine Conservation Zone (MCZ) and Marine Strategy Framework Directive assessments, proposed dewatering discharges/structures in the Project design and a programme for the submission of the draft Deemed Marine Licence. With the implementation of proposed mitigation measures, no significant adverse impacts are predicted on the Swansombe MCZ during the construction and operation of the project.
4.53 NPSNN	When an applicant applies for an Environmental Permit, the relevant regulator (the Environment Agency) requires that the application demonstrates that processes are in place to meet all relevant Environmental Permit requirements.	The Consents and Agreements Position Statement (Application Document 3.3) identifies the separate water Environmental Permits that are required to be obtained separately through the Environment Agency, subsequent to the application for the Development Consent Order (DCO). Discussions between National Highways and the Environment Agency have been ongoing, with a number permits to be obtained by the Contractors in due course in view of the information to be provided at that time.
4.54 NPSNN	Applicants are encouraged to begin preapplication discussions with the Environment Agency as early as possible. It is however expected that an applicant will have first thought through the requirements as a starting point for discussion. Some consents require a significant amount of preparation; as an example, the Environment Agency suggests that applicants should start work towards submitting the permit application at least 6 months prior to the submission of an application for a Development Consent Order, where they wish to parallel track the applications. This will help ensure that applications take account of all relevant environmental considerations and that	Pre-application discussions have been ongoing with the Environment Agency in relation to the requirement for Environmental Permits, although it is recognised that these are largely dependent on the finalisation of detailed design and construction site set up which are not sufficiently developed to confirm the requirements prior to submission of the Development Consent Order (DCO) (Application Document 3.1). As such these consents would need to be obtained by the Contractors who would be in a position to provide the necessary information at the time.

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	the relevant regulators are able to provide timely advice and assurance to the Examining Authority.	
4.55 NPSNN	The Secretary of State should be satisfied that development consent can be granted taking full account of environmental impacts. This will require close cooperation with the Environment Agency and/or the pollution control authority, and other relevant bodies, such as the MMO, Natural England, Drainage Boards, and water and sewerage undertakers, to ensure that in the case of potentially polluting developments: • the relevant pollution control authority is satisfied that potential releases can be adequately regulated under the pollution control framework; and • the effects of existing sources of pollution in and around the project are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits.	The Applicant has worked closely with environmental bodies including the Environment Agency, Natural England, local authorities, the Marine Management Organisation (MMO) and the Port of London Authority in preparing the DCO application. Ongoing cooperation with the relevant consenting authorities ensures that releases of any potential pollutants arising from the Project would be adequately regulated, either within the Development Consent Order (DCO) (Application Document 3.1) or through any other permits, consents or agreements to be sought separately from the DCO, as set out in the Consents and Agreements Position Statement (Application Document 3.3). Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (ES) (Application Document 6.1) states that the potential for pollutant releases from the Project to cause detriment to the water environment have been considered in consultation with the Environment Agency, Natural England and the Marine Management Organisation (MMO). The assessments, detailed in Appendix 14.3: Operational Surface Water Drainage Pollution Risk Assessment; Appendix 14.5: Hydrogeological Risk Assessment; and Appendix 14.7: Water Framework Directive Assessment (Application Document 6.3), conclude that with mitigation in place (described in Appendix 14.5) pollution risks can be adequately regulated. The potential for cumulative effects has also been assessed and these are reported in Chapter 16: Cumulative Effects Assessment of the ES (Application Document 6.1). The Environment Agency, Kent County Council and Essex County Council (acting on behalf of Thurrock) as Lead Local

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		Flood Authorities (LLFAs) and MMO have been consulted about consents and licensing for Project activities such as discharges to the water environment, groundwater control, and works to, and structures in, on, over or under controlled waters. A summary of the consultation undertaken with regulatory authorities is presented in Table 14.1 of Environmental Statement Chapter 14: Road Drainage and the Water Environment. Based on these consultations, which are further detailed in the Statements of Common Ground (Application document references 7.3) there is no reason to believe that the required consents and permits will not be granted.
4.56 NPSNN	The Secretary of State should not refuse consent on the basis of regulated impacts unless there is good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted.	Details of other regulatory permits, consents and agreements to be sought, both as part of and separate to the Development Consent Order (DCO) (Application Document 3.1) for the Project, are set out in the Consents and Agreements Position Statement (Application Document 3.3). Agreements with the consenting bodies, including the Environment Agency, Natural England, local authorities, the Marine Management Organisation (MMO) and the Port of London Authority are being taken forward through the submission of draft Statements of Common Ground with the DCO Application and protective provisions in the draft DCO (Application Document 3.1).
Common law nuisance and statutory nuisance		

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4.57 NPSNN	Section 158 of the Planning Act provides a defence of statutory authority in civil or criminal proceedings for nuisance. Such a defence is also available in respect of anything else authorised by an order granting development consent. The defence does not extinguish the local authority's duties under Part III of the Environmental Protection Act 1990 ("the 1990 Act") to inspect its area and take reasonable steps to investigate complaints of statutory nuisance and to serve an abatement notice where satisfied of its existence, likely occurrence or recurrence.	Responses provided below. (Paragraphs 5.81-5.89)
4.58 NPSNN	It is very important that during the examination of a nationally significant infrastructure project, possible sources of nuisance under section 79(1) of the 1990 Act, and how they may be mitigated or limited are considered by the Examining Authority so they can recommend appropriate requirements that the Secretary of State might include in any subsequent order granting development consent. More information on the consideration of possible sources of nuisance is at paragraphs 5.81-5.89.	The Statement of Statutory Nuisance (Application Document 6.6) identifies possible sources of nuisance under section 79(1) of the Environmental Protection Act 1990. This document concludes that with the appropriate mitigation measures in place, none of the statutory nuisances identified in section 79(1) of the EPA 1990 are predicted to arise during the construction or operation of the Project. 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. This requirement is addressed within the REAC under reference NV004.
4.59 NPSNN	The defence of statutory authority is subject to any contrary provision made by the Secretary of State in any particular case by an order granting development consent (section 158(3) of the Planning Act).	Response provided above. (Paragraphs 5.46-5.66)
Safety		
4.60 NPSNN	New highways developments provide an opportunity to make significant safety improvements. Some developments may	The National Highways Delivery Plan's (2015-2020) stated aim is that, 'no-one should be harmed who builds, operates and

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	have safety as a key objective, but even where safety is not the main driver of a development the opportunity should be taken to improve safety, including introducing the most modern and effective safety measures where proportionate. Highway developments can potentially generate significant accident reduction benefits when they are well designed.	maintains and uses the new road network, with a target for the number of people killed or seriously injured on the road network to be approaching zero by 2040.' The Applicant is committed to playing a key role in achieving this target. The appraisal of traffic accidents on the Affected Road Network (ARN) are addressed in the response to paragraph 3.10 above. The Project would include the following modern and effective measures to improve highway safety along the Project route: • Modern safety measures and construction standards with technology to manage traffic and provide better information to drivers. • Variable Message Signs to display variable speed limits, travel information, hazard warnings and both advisory and mandatory signage to drivers. • CCTV cameras to monitor, manage and investigate incidents, maintenance, network usage, to detect stopped vehicles and for asset protection and the prevention and detection of crime. • Above ground traffic detection to control automatic traffic management systems (e.g. variable speed limits) and to collect data on traffic flows. • Free-flow charging infrastructure. • Equipment within the tunnel to monitor and control the tunnel environment during normal and emergency operations. • Provision on vehicle refuge spaces in line with current standards. Further safety measures are included in Chapter 2: Project Description of the Environmental Statement (Application Document 6.1). Particular safety measures within the tunnel

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		include monitoring equipment to detect broken down vehicles, onsite vehicle recovery and access routes at both entrances for the emergency services. Providing an alternative route for Heavy Goods Vehicles away from the Dartford Crossing and for lorries carrying dangerous goods to pass through the new tunnel would also significantly improve safety and reduce incidents. The tunnel would incorporate the latest fire and safety technology. The response to paragraph 4.66 below sets out the approach taken by the Project to assessing safety and the overall expected reduction in accident rates.
4.61 NPSNN	The applicant should undertake an objective assessment of the impact of the proposed development on safety including the impact of any mitigation measures. This should use the methodology outlined in the guidance from DfT (WebTAG) and from the Highways Agency.	The Applicant has undertaken an objective assessment of the impact of the Project on safety, as reported in Chapter 9 of the Transport Assessment (Application Document 7.9). This uses the methodology outlined in the guidance from the Department for Transport (DfT) (TAG) and from National Highways. This factors-in a range of measures to benefit safety, as referred to in response to paragraph 4.60 above. This list is not exhaustive and highlights some of the main features for mitigating and managing traffic on the Project route. Specific measures to ensure the safety of workers during the construction phases are set out in REAC which is contained within the Code of Construction Practice (CoCP) (Application Document 6.3. Chapter 5 of the CoCP requires the Contractors to produce a construction logistics plan which would contain community safety strategy. The community safety strategy would include measure to ensure that vehicles routes are planned and sites are managed to reduce the risk to vulnerable road users.

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		The response to paragraph 4.66 below sets out the approach taken by the Project in assessing safety and the overall expected reduction in accident rates.
4.62 NPSNN	They should also put in place arrangements for undertaking the road safety audit process. Road safety audits are a mandatory requirement for all trunk road highway improvement Schemes in the UK (including motorways).	A Road Safety Audit arrangement has been put in place to demonstrate a rigorous process for monitoring and evaluating safety. The preliminary design of the Project has been subject to a Stage 1 Road Safety Audit. Stage 2 and 3 Road Safety Audits would be carried out following detailed design and construction of the Project. A Stage 4 Road Safety Audit would be carried out 12-months post Project operation using validated collision data. A Plan for Monitoring Operations (PfMO) would be implemented to determine whether the Project is operating in an effective and safe manner during the initial period of operation. As such the plan would ensure adherence with the Project's monitoring objectives covering the validation of safety performance, significant Project challenges, stakeholder issues and operational outcomes. A Post Opening Project Evaluation (POPE) would be carried out for the Project 1 year after opening to evaluate the safety of the Project and whether it meets the original set of Scheme Objectives.
4.63 NPSNN	Road safety audits are intended to ensure that operational road safety experience is applied during the design and construction process so that the number and severity of collisions is as low as is reasonably practicable. Relevant guidance provided in paragraph 4.62 above	Responses provided in paragraph 4.62 above.

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4.64 NPSNN	The applicant should be able to demonstrate that their Scheme is consistent with the Highways Agency's Safety Framework for the Strategic Road Network and with the national Strategic Framework for Road Safety. Applicants will wish to show that they have taken all steps that are reasonably required to: • minimise the risk of death and injury arising from their development; • contribute to an overall reduction in road casualties; • contribute to an overall reduction in the number of unplanned incidents; and • contribute to improvements in road safety for walkers and cyclists.	The (former) Highways Agency's (2011) Safety Framework on the Strategic Road Network (SRN) includes, a 'decade of action for road safety' following the global initiative of the World Health Organization to reducing road deaths by 50% by 2020. Subsequent strategies and targets have been produced for 2040, as follows: • The Department for Transport's (DfT's) (2020) Road Investment Strategy 2: 2020–2025 (RIS 2) states that, 'We will continue towards the goal of 'Zero Harm', aiming to bring the number of people killed or seriously injured on the SRN to a level approaching zero by 2040'. • The National Highways Health and Safety Five Year Plan issued in May 2017 for 2020 – 2025 includes the aim that, 'no one should be harmed when travelling or working on the strategic road network'. Additionally, the current ethos is 'Our vision can be summed up simply; we want everyone who works with us and everyone who travels on our network to get home safe and well'. The Safety Objective for the Project is consistent with policy, including the DfT's Road investment Strategy, which sets a target of zero road deaths or seriously injured by 2040. The Project design has been carried out in accordance with the relevant sections of National Highways' Design Manual for Roads and Bridges (DMRB). Where it has been necessary to depart from the standards in the DMRB, full safety assessments have been carried out and approval sought from National Highways specialists. The design has followed National Highways' safety governance process. This includes the preparation of a Safety Plan, a Combined Operations Report and a combined Safety and

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Hazard Log Report, all of which need to be 'signed off' by National Highways' safety governance specialist. Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1) states that the Project would adhere to sustainability principles in its delivery by improving the connectivity of communities and providing additional opportunities for recreation through improvements to the local footpath, cycling and horse riding network (WCH) therefore contributing to road safety through making improvements to existing WCH routes. WCH, along with slower vehicles such as mobility scooters would be prohibited from using the Project route in view of safety concerns. The Project Road has been designed to the standards set out in the DMRB and assessed for safety through the Stage 1 Road Safety Audit as recorded in Section 9 of the Transport Assessment (Application Document 7.9). Detailed design will be assessed for safety through Stages 2 and 3 of the Safety Audit process prior to opening a Stage 4 Road Safety Audit will be completed within 12 months of opening to ensure the road is performing safely as indented. The steps taken by the Applicant through the design of the Project include measures to: • minimise the risk of death and injury arising from their development • contribute to an overall reduction in road casualties • contribute to an overall reduction in the number of unplanned incidents • contribute to improvements in road safety for walkers and cyclists

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4.65 NPSNN	They will also wish to demonstrate that: • they have considered the safety implications of their project from the outset; and • they are putting in place rigorous processes for monitoring and evaluating safety.	The Project road has been designed in accordance with the design standards set out in DMRB and taking into account the nature and volume of traffic as indicated in the LTAM using the COBALT software program (Cost and Benefits to Accidents-Light Touch version 2.3 (DfT, 2022). The design has also been assessed for safety through a stage 1 safety audit. This is reported through Section 9 of the Traffic Assessment (Application Document 7.9). Chapter 3 of the Project Design Report (Application Document 7.4) states that the design of the Project would be safe, resilient and easy to use in line with National Highways' ambitious safety targets for 2041. Specific measures to ensure the safety of workers during the construction phase are set out in the Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3) requiring the Contractors to produce a construction logistics plan to include a community safety strategy, a national standard of planning the supply routing and management of sites to reduce the risk to vulnerable road users. The Contractors would be expected to hold certifications for safety, environment, quality, i.e. to ISO 45001, ISO 9001, ISO 14001:2015, to include procedures for responding to emergency events. The response to paragraph 4.62 above sets out the rigorous process for monitoring and evaluating safety on the Project route.
4.66 NPSNN	The Secretary of State should not grant development consent unless satisfied that all reasonable steps have been taken and will be taken to: • minimise the risk of road casualties arising from the scheme; and	The design of the Project has been guided by relevant technical standard, in particular the Design Manual for Roads and Bridges (DMRB) (Highways England, 2018). This forms the basis of highway safety design which seeks to minimise the risk of road casualties arising from highway schemes and contribute to an

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	• contribute to an overall improvement in the safety of the Strategic Road Network.	overall improvement in the safety of the strategic road network (SRN). The safety of road users has been considered as part of developing the preferred route option and design of the Project, including mitigation measures and safety benefits, such as: • Modern safety measures and construction standards with technology to manage traffic and provide better information to drivers. • Variable Message Signs to display variable speed limits, travel information, hazard warnings and both advisory and mandatory signage to drivers. • CCTV cameras to monitor, manage and investigate incidents, maintenance, network usage, to detect stopped vehicles and for asset protection and the prevention and detection of crime. • Above ground traffic detection to control automatic traffic management systems (e.g. variable speed limits) and to collect data on traffic flows. • Free-flow charging infrastructure. • Equipment within the tunnel to monitor and control the tunnel environment during normal and emergency operations. Further safety measures are included in Chapter 2: Project Description of the Environmental Statement (Application Document 6.1). Particular safety measures within the new tunnel include monitoring equipment to detect broken down vehicles, onsite vehicle recovery and access routes at both entrances for the emergency services. Providing an alternative route for Heavy Goods Vehicles away from the Dartford Crossing and for lorries carrying dangerous goods to pass through the new tunnel would

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		also significantly improve safety and reduce incidents. The new tunnel would incorporate the latest fire and safety technology. National Highways' Delivery Plan's (2015-2020) stated aim is that, 'no-one should be harmed who builds, operates and maintains and uses the new road network, with a target for the number of people killed or seriously injured on the road network to be approaching zero by 2040.' The Transport Assessment (Application Document 7.9) has assessed the Project in line with TAG to forecast the total number of personal injury accidents and casualties for 2030, which is the opening year of the Project as modelled by the LTAM. The accident appraisal is based on a comparison of the number of accidents and casualties between the 'Without Scheme' and 'With Scheme' scenarios. The Project has taken all reasonable steps to minimise the risk of road casualties and by reason of the traffic accidents per vehicle kilometre decreasing, demonstrates the Project would contribute to the overall safety of the SRN. While a small increase in collision numbers as a result of more traffic in the study area is forecast, there would be a reduction in the collision rate (i.e., collisions per vehicle mile travelled) as a result of a managed, less congested network. This is further detailed in Appendix D (Economic Appraisal Report) of the Combined Modelling and Appraisal Report (Application Document 7.7).
4.67 – 4.73 NPSNN	Response considered unnecessary as it relates to rail development.	No response required.
Security considerations		

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
4.74- 4.75 NPSNN 4	National security considerations apply across all national infrastructure sectors. The Department for Transport acts as the Sector Sponsor Department for the national networks and in this capacity has lead responsibility for security matters in that sector and for directing the security approach to be taken. The Department works closely with Government agencies including the Centre for the Protection of National Infrastructure (CPNI) to reduce the vulnerability of the most 'critical' infrastructure assets in the sector to terrorism and other national security threats. Government policy is to ensure that, where possible, proportionate protective security measures are designed into new infrastructure projects at an early stage in the project development. Where applications for development consent for infrastructure covered by this NPS relate to potentially 'critical' infrastructure, there may be national security considerations.	Responses provided below. (Paragraphs 4.74- 4.77)

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
4.76 - 4.77 NPSNN	Where national security implications have been identified, the applicant should consult with relevant security experts from CPNI [Centre for the Protection of National Infrastructure] and the Department for Transport, to ensure that physical, procedural and personnel security measures have been adequately considered in the design process and that adequate consideration has been given to the management of security risks. If CPNI and the Department for Transport (as appropriate) are satisfied that security issues have been adequately addressed in the project when the application is submitted, they will provide confirmation of this to the Secretary of State, and the Examining Authority should not need to give any further consideration to the details of the security measures during the examination. The applicant should only include such information in the application as is necessary to enable the Examining Authority to examine the development consent issues and make a properly informed recommendation on the application.	National Highways has liaised with the Department for Transport (DfT) on the approach to security taken by the Project ahead of the DCO being submitted. The DfT has confirmed in writing and understand that security issues will have been adequately addressed in the Project by National Highways and through engagement with the DfT and the Centre for the Protection of National Infrastructure (CPNI). DfT agrees that regular communication on security should continue between National Highways, the Department and the CPNI outside the DCO Examination process. DfT shall communicate this to the Secretary of State, so that the Examining Authority should not need to give any further consideration to the details of the security measures during the Examination.
Health		
4.79 – 4.80 NPSNN	National road and rail networks and strategic rail freight interchanges have the potential to affect the health, well-being and quality of life of the population. They can have direct impacts on health because of traffic, noise, vibration, air quality and emissions, light pollution, community severance, dust, odour, polluting water, hazardous waste and pests. 4.80 New or enhanced national network infrastructure may have indirect health impacts; for example if they affect access to key public services, local transport, opportunities for cycling and walking or the use of open space for recreation and physical activity.	Responses provided below. (Paragraphs 4.79-4.82)

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
4.81 NPSNN	As described in the relevant sections of this NPS, where the proposed project has likely significant environmental impacts that would have an effect on human beings, any environmental statement should identify and set out the assessment of any likely significant adverse health impacts.	A standalone Health and Equalities Impact Assessment (Application Document 7.10) has been prepared for the Project, the key findings from which have been incorporated within Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1). The assessment of effects on population and human health has considered the construction and operational effects on receptors and compliance with standards. Assessments were undertaken in accordance with the Design Manual for Roads and Bridges DMRB LA 112 (Highways England, 2019). The current environment has been described in relation to the local and wider economy; private property and housing; community land and assets; development land and businesses; agricultural land holdings; walkers, cyclists and horse riders (WCH); and human health. Potential effects have been described in relation to each of these topic areas. Sensitive communities and populations have been identified as part of the human health assessment. The effects on these populations are described in further detail within Chapter 13 of the Environmental Statement (Application Document 6.1). Whilst some adverse impacts would occur in relation to noise and severance the majority of these would be associated with the construction phase and would therefore be temporary in nature. A number of long term health benefits would be delivered as a result of the project, including enhanced connectivity for non-motorised transport and recreational access.
4.82 NPSNN	The applicant should identify measures to avoid, reduce or compensate for adverse health impacts as appropriate. These impacts may affect people simultaneously, so the applicant, and the Secretary of State (in determining an application for	The Development Consent Order (DCO) (Application Document 3.1) is accompanied by a standalone Health and Equalities Impact Assessment (Application Document 7.10). The Health and Equalities Impact Assessment reports the findings of the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	development consent) should consider the cumulative impact on health.	assessment of likely effects of the construction and operation of the Project on human health and equalities, which has been used to inform the iterative development of the Project design. Whilst negative impacts on accessibility would occur over the construction phase, these would be minimised as far as practicable and would be compensated in the long term through significant enhancements during the operation of the project. Replacement land, or land which could mitigate the impacts identified, has been incorporated into the proposals. There would be localised negative impacts on severance and access to open space within Gravesham and Thurrock, but, with the exception of one existing link (Hornsby Lane) being permanently severed by the Project, no further harmful impacts are anticipated once the project becomes operational and routes become replaced or re-instated. All PRoWs, bridleways and cycle routes crossed by the Project would be re-linked with alignments in locations that are as close as possible to their existing route, unless better quality routes can be provided in the vicinity, Footbridges, green bridges and underpasses would be accessible to all users. Both negative and positive localised impacts on human health in relation to noise and vibration are, with significant enhancements in Dartford and (to a lesser extent) Thurrock. No significant air quality impacts are predicted over the construction phase. Significant working and training benefits would be delivered across the project over both the construction and operational phases.
Strategic rail freight interchanges		

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
4.83 – 4.89 NPSNN	Response considered unnecessary as it relates to rail development.	No response required.

Table A.4 National Policy Statement for National Networks (NPSNN) – Chapter 5

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5 – Generic Impacts		
5.1 – 5.2 NPSNN	Some impacts will be relevant to any national networks infrastructure, whatever the type. The following sections set out how these impacts should be considered. While the NPS covers developments in England only, assessments of impacts should take account of any impacts this type of infrastructure may have in the devolved administrations. Where projects affect cross-border links, scheme promoters should work with the devolved administrations. The Government's planning guidance, which is referred to in this chapter, is likely to be a useful source of guidance on generic impacts. Sufficient relevant information is crucial to good decision-taking, particularly where formal assessments are required (such as Environmental Impact Assessment, Habitats Regulations Assessment and Flood Risk Assessment). To avoid delay, applicants should discuss what information is needed with statutory environmental bodies as early as possible.	Factual introductory remarks on 'generic impacts'. No response required.
Air Quality		
5.3 – 5.5 NPSNN	Increases in emissions of pollutants during the construction or operation phases of projects on the national networks can result in the worsening of local air quality (though they can	Factual introductory remarks on air quality. No response necessary.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	also have beneficial effects on air quality, for example through reduced congestion). Increased emissions can contribute to adverse impacts on human health, on protected species and habitats. Impacts on protected species and habitats are covered in later paragraphs. Current UK legislation sets out health-based ambient air quality objectives. In addition, the European Union has established common, health-based and eco-system based ambient concentration limit values (LVs) for the main pollutants in the Ambient Air Quality Directive (2008/50/EU) ('the Air Quality Directive'), which Member States are required to meet by various dates. The geographical extent and distribution of these effects can cover a large area, well beyond an individual scheme. Air quality impacts are generated by all types of infrastructure development to varying extents.	
5.6 - 5.9 NPSNN	Where the impacts of the project (both on and off Scheme) are likely to have significant air quality effects in relation to meeting EIA requirements and / or affect the UKs ability to comply with the Air Quality Directive, the applicant should undertake an assessment of the impacts of the proposed project as part of the environmental statement. The environmental statement should describe: • existing air quality levels;	An air quality assessment has been undertaken to consider the air quality effects arising from the construction and operation of the Project, taking account of the impact of road traffic. The assessment has determined the significance of air quality effects and the risk of non-compliance with the Air Quality Directive. Chapter 5: Air Quality of the Environmental Statement (ES) (Application Document 6.1) sets out the existing air quality conditions (Base scenario) and future air quality at the time of opening both 'Without Scheme' (Do Minimum scenario) and 'With Scheme' (Do Something scenario).

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	• forecasts of air quality at the time of opening, assuming that the Scheme is not built (the future baseline) and taking account of the impact of the Scheme; and • any significant air quality effects, their mitigation and any residual effects, distinguishing between the construction and operation stages and taking account of the impact of road traffic generated by the project. Defra publishes future national projections of air quality based on evidence of future emissions, traffic and vehicle fleet. Projections are updated as the evidence base changes. Applicant's assessment should be consistent with this but may include more detailed modelling to demonstrate local impacts. In addition to information on the likely significant effects of a project in relation to EIA, the Secretary of State must be provided with a judgement on the risk as to whether the project would affect the UK's ability to comply with the Air Quality Directive.	The assessment undertaken has used the latest Department for Environment, Food and Rural Affairs (Defra) air quality tools available at the time of the assessment, including background air quality maps and emission projections, which are incorporated into National Highways' speed band emission factors. These tools have been used together with detailed modelling to determine the air quality effects of the Project, as described in Section 5.3 of Chapter 5. Section 5.5 of Chapter 5 outlines a number of the associated good practice mitigation, including measures to reduce the air quality effects associated with construction dust as well as emissions from construction vehicles and Non Road Mobile Machinery (NRMM). The assessment has concluded that the Project does not lead to a significant air quality effect when considering human health and compliance risk with the Air Quality Directive but does lead to a significant air quality effect on designated habitats as a result of changes in nitrogen deposition. A Project Air Quality Action Plan has been developed to consider mitigation for the significantly affected habitats and is presented in Appendix 5.6: Project Air Quality Action Plan (Application Document 6.3). Alongside speed enforcement measures, compensation for the residual effects of nitrogen deposition in the form of habitat creation on seven sites has been proposed. However, the considered measures do not eliminate the significance of effect on all the designated habitats and it has been concluded that the Project leads to a significant air quality effect. European sites with the potential to be affected by the Project and any potentially significant effects can be found in the Habitats Regulations Assessment (HRA) Screening Report (Application Document 6.5). This includes changes in air quality from vehicle emissions during the operational phase, for Epping Forest Special Area of Conservation (SAC) the potential for likely significant effects cannot be discounted as a result of the Project, and the North Downs Woodland SAC there would be no

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		likely significant effect resulting from the project or in combination with other plans or projects. The Habitats Regulation Assessment (HRA) has concluded that, there would be no significant adverse effects from the Project alone or in combination with other plans or projects on this designated site.
5.10 NPSNN	The Secretary of State should consider air quality impacts over the wider area likely to be affected, as well as in the near vicinity of the Scheme. In all cases the Secretary of State must take account of relevant statutory air quality thresholds set out in domestic and European legislation. Where a project is likely to lead to a breach of the air quality thresholds, the applicant should work with the relevant authorities to secure appropriate mitigation measures with a view to ensuring so far as possible that those thresholds are not breached.	The air quality assessment has considered impacts at receptors within the vicinity of the Project route and across the Affected Road Network (ARN) which covers a wider area. This is described in Section 5.3 of Chapter 5: Air Quality (Application Document 6.1) and shown in Figure 5.3 (Application Document 6.3). Air quality effects have been considered in relation to relevant statutory thresholds in order to consider the significance of effects and risk of non-compliance with the Air Quality Directive. The effects are described in Section 5.6 of Chapter 5: Air Quality (Application Document 6.1), and the mitigation measures identified are described in Section 5.5 of Chapter 5: Air Quality (Application Document 6.1). In addition, where the Project does lead to an exceedance of air quality thresholds, regardless of whether the Project is considered to have a significant effect, measures have been investigated to determine whether the impact of the Project could be reduced. The Project does not affect the UK's ability to comply with the Air Quality Directive in the shortest time possible and does not lead to a significant air quality effect on human health. The Project does however lead to a significant air quality effect on designated habitats as a result of changes in nitrogen deposition. A Project Air Quality Action Plan has been developed to consider mitigation for the significantly affected habitats and is presented in Appendix 5.6: Project Air Quality Action Plan (Application Document 6.3). However, the considered measures do not eliminate the significance of effect on all the designated habitats, and it has been concluded that the Project leads to a significant air quality effect.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.11 NPSNN	Air quality considerations are likely to be particularly relevant where schemes are proposed: • within or adjacent to Air Quality Management Areas (AQMA); roads identified as being above Limit Values or nature conservation sites (including Natura 2000 sites and SSSIs, including those outside England) • where changes are sufficient to bring about the need for a new AQMAs or change the size of an existing AQMA; or bring about changes to exceedences of the Limit Values, or where they may have the potential to impact on nature conservation sites.	Air quality impacts have been considered near the Application Site and within 200m of the ARN. The assessment considers impacts on statutory air quality thresholds, including in AQMAs, and considers impacts on nature conservation sites as discussed in Section 5.6 of Chapter 5: Air Quality (Application Document 6.1). With future improvements in air quality (particularly for AQMAs designated due to road traffic, because, vehicle emissions will improve over time), it is anticipated that there will be fewer areas where the NO2 AQS objective is exceeded across the study area by the Project's opening year.
5.12 NPSNN	The Secretary of State must give air quality considerations substantial weight where, after taking into account mitigation, a project would lead to a significant air quality impact in relation to EIA and / or where they lead to a deterioration in air quality in a zone/agglomeration.	The air quality assessment has been undertaken in accordance with DMRB LA 105 standards, which provide an assessment of Project impacts on human health, designated habitats and compliance with the Air Quality Directive to determine whether the Project results in significant air quality effects. The air quality effects are described in Section 5.6 of Chapter 5: Air Quality (Application Document 6.1), and the mitigation measures identified are described in Section 5.5 of Chapter 5: Air Quality (Application Document 6.1). The assessment has concluded that, taking into account the implementation of good practice measures in the Register of Environmental Actions and Commitments (REAC), which forms part of Appendix 2.2: Code of Construction Practice (CoCP) ((ES Appendix 2.2 Application Document 6.3)) and the predicted changes in air quality during construction and operation, the Project does not affect the UK's ability to comply with the Air Quality Directive in the shortest time possible and does not lead to a significant air quality effect on human health. The Project does however lead to a significant air quality effect on designated habitats as a result of changes in nitrogen deposition, including after

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		consideration of the mitigation measures outlined in the Project Air Quality Plan (Appendix 5.6: Project Air Quality Action Plan (Application Document 6.3)).
5.13 NPSNN	The Secretary of State should refuse consent where, after taking into account mitigation, the air quality impacts of the Scheme will: • result in a zone/agglomeration which is currently reported as being compliant with the Air Quality Directive becoming non-compliant; or • affect the ability of a non-compliant area to achieve compliance within the most recent timescales reported to the European Commission at the time of the decision.	A compliance risk assessment has been undertaken to determine whether the Project would affect compliance with the Air Quality Directive, as presented in Section 5.6 of Chapter 5: Air Quality (Application Document 6.1). The assessment concluded that there is no risk to the reported date of compliance with the Directive (i.e. the Project does not cause a compliant zone to become non-compliant, or affect the ability of a non-compliant area to achieve compliance within the most recent timescales reported).
5.14 - 5.15 NPSNN	The Secretary of State should consider whether mitigation measures put forward by the applicant are acceptable. A management plan may help codify mitigation at this stage. The proposed mitigation measures should ensure that the net impact of a project does not delay the point at which a zone will meet compliance timescales. Mitigation measures may affect the project design, layout, construction, operation and/or may comprise measures to improve air quality in pollution hotspots beyond the immediate locality of the Scheme. Measures could include, but are not limited to, changes to the route of the new Scheme, changes to the proximity of vehicles to local receptors in the existing route, physical means including	The mitigation measures identified for the Project are described in Section 5.5 of Chapter 5: Air Quality (Application Document 6.1). Construction phase good practice measures for air quality are outlined in the REAC (Application Document 6.3, Appendix 2.2). The REAC includes measures to reduce the air quality effects associated with construction dust as well as emissions from NRMM and construction vehicles. The Project is not predicted to lead to a significant air quality effect on human health or delay compliance with the Air Quality Directive, but there are significant effects on designated habitats as a result of changes in nitrogen deposition. Mitigation has been considered as a result of operational effects on designated habitats and is presented in the Project Air Quality Plan (Appendix 5.6: Project Air Quality Action Plan (Application Document 6.3)). A number of potential compensation measures are proposed to fully compensate for residual significant effects. The compensation strategy proposed consists of landscape scale habitat creation across nitrogen

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	barriers to trap or better disperse emissions, and speed control. The implementation of mitigation measures may require working with partners to support their delivery.	deposition compensation sites, located both north and south of the river, and covering an area of approximately 205ha. These compensatory measures are detailed within Figure 2.4: Environmental Masterplan (Application Document 6.2) and the Design Principles Document (Application Document 7.5) which would be legally secured through DCO Requirements 4 and 3 respectively.
Carbon Emissions		
5.16 NPSNN	The Government has a legally binding framework to cut greenhouse gas emissions by at least 80% by 2050. As stated above, the impact of road development on aggregate levels of emissions is likely to be very small. Emission reductions will be delivered through a system of five year carbon budgets that set a trajectory to 205069. Carbon budgets and plans will include policies to reduce transport emissions, taking into account the impact of the Government's overall programme of new infrastructure as part of that.	Factual introductory remarks. No response necessary.
5.17 NPSNN	Carbon impacts will be considered as part of the appraisal of Scheme options (in the business case), prior to the submission of an application for DCO. Where the development is subject to EIA, any Environmental Statement will need to describe an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive. It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets. However, for road projects applicants should	Section 15.6 in Chapter 15: Climate of the Environmental Statement (ES) (Application Document 6.1) assesses the carbon impacts of the Project during the construction and operational phases and compares these to the Government's relevant carbon budgets. In considering the scheme design options, the project has applied the GHG emission hierarchy (avoid, prevent, reduce, remediate). However, the Applicant is committed to going further and to using the time available before construction of the Project begins, to explore ways of achieving greater reductions in emissions, reflecting the Project's 'pathfinder' status. To deliver on this, the Applicant has set carbon aims for the Project:

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets.	• To construct it for the lowest practicable carbon emissions • To test low-carbon innovation and approaches • To leave a legacy that enables future projects to achieve carbon-neutral construction A Carbon and Energy Management Plan (Application Document 7.19) has also been produced which sets out the Applicant's carbon ambitions for the Project and the mechanisms that it will use to deliver them. These include: • Selecting the right partners • Setting appropriate minimum standards • Rewarding carbon reduction • Investing in low carbon innovation • Adopting a best practice carbon management approach. In addition, National Highways have prepared Appendix I: Carbon Strategy and Policy Alignment of this Planning Statement which sets out the low carbon innovation and approaches which 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. This approach has also been used to inform the assumptions used to develop the 'Do Something' scenario presented in 'assumptions and limitations' section in Section 15.3 of ES Chapter 15 (Application Document 6.1). In particular, the Project has proposed a more carbon efficient design for the tunnel portal, changing from a large rectangular box to a caterpillar design. The saving has been calculated by quantifying the embodied carbon in the caterpillar design and comparing it to the large rectangular box design. The size of some assets has also been reduced to limit the amount of material required and therefore the embodied emissions. Examples are numerous but include: • removing the bridge at Hornsby Lane • reducing the number of lanes on the Project road south of the M25

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		• widening the existing Rectory Road rather than constructing a new highway • reducing the span of the Tilbury Viaduct from 1.2km to 600m The GHG assessment has concluded that the effect on climate during the construction and operational phase of the Project are anticipated to be not significant. The ES concludes that the GHG emissions arising from the Project would not have a material impact on the Government meeting its carbon reduction targets. In addition, the Applicant has committed to use the Project to test low carbon innovation and approaches, the Project would push the construction industry towards a net zero carbon trajectory, as set out in Appendix I (Carbon Strategy and Policy Alignment) of this Planning Statement. Appendix I: Carbon Strategy and Policy Alignment of this Planning Statement demonstrates how the NPSNN policy requirements have been both met and exceeded as well as how the Carbon and Energy Management Plan (Application Document 7.19) would set new standards in best practice for carbon reduction in major civil engineering projects.
5.18 NPSNN	The Government has an overarching national carbon reduction strategy (as set out in the Carbon Plan 2011) which is a credible plan for meeting carbon budgets. It includes a range of non-planning policies which will, subject to the occurrence of the very unlikely event described above, ensure that any carbon increases from road development do not compromise its overall carbon reduction commitments. The Government is legally required to meet this plan. Therefore, any increase in carbon emissions is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the proposed	See response to paragraphs 5.17 and 5.19.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets.	
5.19 NPSNN	Evidence of appropriate mitigation measures (incorporating engineering plans on configuration and layout, and use of materials) in both design and construction should be presented. The Secretary of State will consider the effectiveness of such mitigation measures in order to ensure that, in relation to design and construction, the carbon footprint is not unnecessarily high. The Secretary of State's view of the adequacy of the mitigation measures relating to design and construction will be a material factor in the decision making process.	Chapter 15: Climate of the Environmental Statement (ES) (Application Document 6.1) outlines how the Project has applied and developed measures to avoid/prevent, reduce and remediate its greenhouse gas emissions (GHG) emissions during both the construction and operational phases, in helping to contribute to the UK's target for net reduction in carbon emissions. Mitigation measures over the construction and operation phases are varied and include: • Reducing the import of fill through the retention and reuse of excavated materials • Maximising the potential for reusing demolition and waste concrete materials as recycled aggregate onsite • No backfilling of the tunnel deck gallery with ballast concrete. • Use of energy efficient equipment during the construction phase • Procurement of renewable electricity to cover the compounds' electricity consumption (including the electricity consumption of the tunnel boring machine and concrete batching plant) • Drainage design reduces the risk of causing flooding elsewhere by using attenuation features • LED Lighting • Tunnel sensors for ventilations control to ensure efficient operation. • Planting of trees and vegetation. Appendix 15.1: Carbon and Energy Plan of ES (Application Document 6.3) will be legally secured through DCO Requirement 16, sets out an energy strategy for the Project, identifying potential opportunities for the utilisation of renewable energy on the Project. For example, the Applicant

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		would require Contractors to commit to procuring renewable electricity to cover the consumption by compounds (including the consumption of the tunnel boring machine and concrete batching plant).
Biodiversity and Ecological Conservation		
5.20 – 5.21 NPSNN	Biodiversity is the variety of life in all its forms and encompasses all species of plants and animals and the complex ecosystems of which they are a part. Government policy for the natural environment is set out in the Natural Environment White Paper (NEWP). The NEWP sets out a vision of moving progressively from net biodiversity loss to net gain, by supporting healthy, well-functioning ecosystems and establishing more coherent ecological networks that are more resilient to current and future pressures. Geological conservation relates to the sites that are designated for their geology and/or their geomorphological importance. The wide range of legislative provisions at the international and national level that can impact on planning decisions affecting biodiversity and geological conservation issues are set out in a Government Circular	Factual introductory remarks. No response required.
5.22 - 5.23 NPSNN	Where the project is subject to EIA the applicant should ensure that the environmental statement clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) on protected species and on	Chapter 8: Terrestrial Biodiversity of the Environmental Statement (ES) (Application Document 6.1) outlines the effects of the Project on sites, habitats and species. The potential impacts on ecosystems, summarised in Section 8.6 of Chapter 8 include: • Habitat loss • Direct mortality

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems. The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.	• Fragmentation • Habitat degradation • Disturbance Table 8.37 in Chapter 8 of the ES provides a summary of the likely significant residual effects on internationally, nationally and locally designated sites of ecological or geological conservation importance as follows, taking into consideration agreed mitigation measures: • Permanent habitat loss at Shorne and Ashenbank Woods SSSI, Claylane Wood ancient semi-natural woodland (ASNW). • Permanent loss of veteran trees • Habitat loss at Low Street Pit Local Wildlife Site (LWS), Rainbow Shaw LWS, Blackshots Nature Area LWS, Codham Hall Wood LWS and ASNW, ancient woodland west of M25 junction 29, Franks Wood ASNW • Loss of habitat used by terrestrial invertebrates and mortality of terrestrial invertebrate assemblages • Permanent effects on ancient woodland at M2 junction 1 Proposed mitigation for the sites listed above include the translocation of protected species and ancient woodland soils from the construction area to newly created habitats and embedded design measures to reduce the magnitude of potential effects by, for example, providing safe crossing points for wildlife over or under the operational highway. Areas identified for compensatory ancient woodland planting to offset the loss of ancient woodland would be inoculated, where reasonably practicable, with soils from ancient woodland sites within the Order Limits (as identified on Figure 8.1 of the ES (Application Document 6.2)) that would be disturbed by construction activity. The soils would be translocated in advance of construction activities commencing at the donor sites, avoiding weather constraints, timing conflicts with protected

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		species licensing activities, and only once any essential mitigation required for buried archaeology has been completed. Solid barriers would also be installed to protect retained ancient trees, ancient woodland and veteran trees. An appropriate buffer for fencing would be established for each type to ensure protection of the Root Protection area. Where removal of veteran trees is required, the intact hulks of lost veteran trees would be relocated in close proximity to a nearby veteran tree, woodland or parkland area in accordance with government standing advice prepared by Natural England and the Forestry Commission (2018). This would provide opportunity for those invertebrates and fungi residents within the tree to relocate. Compensatory measures are proposed to counteract significant effects on biodiversity that cannot be avoided or mitigated. This includes habitat creation to offset losses of ancient woodland and the provisions of barn owl nest boxes to compensate for the loss of barn owl individuals. Habitat creation proposals would provide localised benefits to some ecological features, by providing extensive areas of new planting that would improve the connectivity between existing habitats. A minimum of 30 trees of local provenance would be planted as replacement for 10 lost veteran trees, 15 south of the River Thames and 15 to the north of the River Thames. The location of these would be agreed with the Secretary of State (SoS) following consultation with relevant local authorities Section 8.6 of Chapter 8 of the ES identifies the opportunities taken to protect and enhance biodiversity and geological conservation interests. This includes the following: • Habitat creation to the north of the River Thames, including a number of different habitats created to enhance the environment adjacent to the River, while also increasing the area's biodiversity value

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		• Seven green bridges across the Project route, replacing existing road bridges to create habitat corridors, allowing for an improved environment for those using, crossing and living in the immediate vicinity of the Project, and enhance the existing connectivity in the wider area • Within the vicinity of the Mardyke, watercourses to be enhanced to become more suitable for water vole Chapter 9: Marine Biodiversity of the Environmental Statement (ES) (Application Document 6.1) outlines the effects of the Project on marine benthic habitats, benthic invertebrates and marine mammals. Potential effects related to construction, operation and decommissioning of the northern tunnel entrance compound drainage pipeline and outfall; permanent Project water management outfall; tunnel boring operations; and tunnel operation, have been assessed in relation to relevant marine receptors. A number of embedded, essential and good practice mitigation measures (set out in section 9.5 of ES Chapter 9: Marine Biodiversity, Application Document 6.1) have been considered as part of the assessment. Application of these measures resulted in no likely significant effects on designated sites of ecological importance or protected species and habitats being identified. There are no internationally or nationally designated sites of geological conservation within the study area as detailed in Section 10.4 of ES Chapter 10: Geology and Soils (Application Document 6.1). A number of potential Local Geological Sites, identified by the Essex Field Club, were identified within the geology and soils study area. However, these do not have a statutory designation. Finally, a Habitat Regulations Assessment Report (Application Document 6.5) has been prepared by National Highways to inform the Habitats Regulations Assessment process. The report concludes there would be no adverse effects on the integrity of any European site, and accordingly there is no requirement for consideration of derogation at Stage 3. In order to avoid adverse effects on the integrity of European sites, the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Applicant has committed to a number of mitigation measures secured via the Register of Environmental Actions and Commitments (REAC) (Application Document 6.3) or the Design Principles (Application Document 7.5) and set out at Section 1.5 of the Habitat Regulations Assessment Report.
5.24 NPSNN	The Government's biodiversity strategy is set out in Biodiversity 2020: A Strategy for England's wildlife and ecosystem services. 74 Its aim is to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people. This aim needs to be viewed in the context of the challenge of climate change: failure to address this challenge will result in significant impact on biodiversity.	No response required.
5.25 NPSNN	As a general principle, and subject to the specific policies below, development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity offsetting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought.	The Project has sought to avoid significant harm to features of biodiversity and geological interest, both during the consideration of route alternatives (Application Document 6.1, Chapter 3: Assessment of Reasonable Alternatives of the Environmental Statement) and as part of the EIA. The selected route alignment was chosen to reduce intrusion into the protected sites of the Thames Estuary. Additionally, providing a link to the M2 further east of the selected route through Kent was discounted as an option as this would necessitate direct loss of habitat from and fragmentation of the ancient woodland in this area. The design presented at the 2020 Supplementary Consultation resulted on the removal of one lane southbound between the M25 and A13/A1089 junction to reduce the extent of habitat loss in this area. This approach has ensured any significant effects can be avoided and minimised as far as practicable.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		A number of potential compensation measures are proposed to fully compensate for residual significant effects. The compensation strategy proposed consists of landscape scale habitat creation across nitrogen deposition compensation Sites, located both north and south of the river, and covering an area of approximately 205ha. Additionally, hedgerow habitat lost during construction would be compensated by creating new hedgerows at locations shown on the Environmental Masterplan, using native species of local provenance. These measures (amongst the various other referred to within ES Chapter 8) are detailed within Figure 2.4: Environmental Masterplan (Application Document 6.2) and the Design Principles Document (Application Document 7.5) which would be legally secured through DCO Requirements 4 and 3 respectively. Mitigation measures have been informed by best practice guidance, including the translocation of protected species from construction areas to suitable retained or newly created habitats, as well as embedded design measures to reduce the magnitude of potential effects, for example providing safe crossing points for wildlife over or under the operational highway. With the implementation of mitigation measures such as treating discharge water prior to discharge into the River Thames, there are not expected to be significant effects on marine biodiversity during construction. Additionally, there are no significant effects on marine biodiversity predicted during operation. ES Chapter 10 Geology and Soils (Application Document 6.1) confirms that there would be no significant harm to geological conservation interests. Details of the mitigation measures considered as part of the assessment are provided in Section 10.5.
5.26 NPSNN	In taking decisions, the Secretary of State should ensure that appropriate weight is	The presence of designated sites of international, national and local importance, protected species, habitats and other species of principal

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	attached to designated sites of international, national and local importance, protected species, habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment.	importance for the conservation of biodiversity, and to biodiversity and geological interests within the defined study area are described in Section 8.4 of ES Chapter 8: Terrestrial Biodiversity and Section 9.4 of ES Chapter 9: Marine Biodiversity(Application Document 6.1). European sites with the potential to be impacted by the proposals are also described within Section 5 of the Habitats Regulations Assessment (HRA) (Application Document 6.5). The identified impacts on these biodiversity interests (having regard to Project design and mitigation) are described within Section 8.6 of ES Chapter 8: Terrestrial Biodiversity (Application Document 6.1) and Section 9.6 of ES Chapter 9: Marine Biodiversity (Application Document 6.1) and are also addressed in response to the NPSNN paragraphs below.
5.27 NPSNN	The most important sites for biodiversity are those identified through international conventions and European Directives. The Habitats Regulations provide statutory protection for European sites (see also paragraphs 4.22 to 4.25). The National Planning Policy Framework states that the following wildlife sites should have the same protection as European sites: • Potential Special Protection areas and possible Special Areas of Conservation; • listed or proposed Ramsar sites; and • sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation and listed or proposed Ramsar sites.	European sites with the potential to be affected by the Project and any potentially significant effects can be found in the Habitats Regulations Assessment (HRA) Screening Report (Application Document 6.5). The baseline conditions reported in Section 8.4 of ES Chapter 8, Biodiversity (Application Document 6.1) identified the Thames Estuary and Marshes Ramsar designation as being located within the Order Limits and the Thames Estuary and Marshes SPA, North Downs Woodland SAC and Peter's Pit SAC within 2km of the Order Limits. Assessments specific to nitrogen deposition impacts also consider the Epping Forest SAC designation, which lies 14 km from the Order Limits. The mitigation measures referred to within the HRA including ecology mitigation areas, operational drainage measures and best practice are all integral to the Project and would all be required irrespective of whether any potential effect pathways on European sites were present. Therefore, these measures have been taken into account within the assessment of LSE and the HRA has concluded that there would be no significant adverse effects from the Project alone or in combination with other plans or projects on these designated sites.

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5.28 NPSNN	Many Sites of Special Scientific Interest (SSSIs) are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection. All National Nature Reserves are notified as SSSIs.	Responses provided in paragraph 5.29 below.
5.29 NPSNN	Where a proposed development on land within or outside a SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect on the site's notified special interest features is likely, an exception should be made only where the benefits of the development at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSIs. The Secretary of State should ensure that the applicant's proposals to mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity or geological interest, are acceptable. Where necessary, requirements and/or planning obligations should be used to ensure these proposals are delivered.	ES Chapter 9: Marine Biodiversity (Application Document 6.1) reports that no adverse impacts upon any designated SSSIs within the marine environment will result from the Project. Section 8.6 of ES Chapter 8, Terrestrial Biodiversity (Application Document 6.1) presents an assessment of the likely significant impacts of the Scheme on SSSI designations. These comprise loss of habitat over the construction phase alongside impacts from nitrogen deposition during the operation of the Project. It has been established through the route options selection process and the development of the route following PRA (described in further detail within Chapter 5 of this Planning Statement) that it would not be feasible to completely avoid direct and indirect effects upon SSSI designations. The PRA was selected, in part because it would necessitate less direct loss of habitat of SSSI status than the other options considered and the refinement of the scheme has sought to minimise these impacts further (for example through considering various options for utilities diversions and junction designs). The loss of SSSI habitat would be compensated for with extensive woodland planting which would be contiguous with the SSSI designations, enhancing connectivity with existing habitats and increasing the overall extent of planting (as detailed within the oLEMP (Application Document 6.7). This would ensure overall resilience to habitats in the longer term.

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		The measures within the Project Air Quality Action Plan (PAQAP) (ES Appendix 5.6, Application Document 6.3) also propose nitrogen deposition compensation sites alongside speed enforcement measures which will offset and mitigate the identified air quality impacts as far as practicable. It can therefore can be concluded that the adverse impacts identified are significantly outweighed by the national need for the project, which is required to deliver economic growth, along with the various identified public benefits referred to within Chapter 4 of this Planning Statement and the Need for Development (Application Document 7.1)
5.30 NPSNN	Marine Conservation Zones (MCZs), introduced under the Marine and Coastal Access Act 2009, are areas that have been designated for the purpose of conserving marine flora or fauna, marine habitat or types of marine habitat or features of geological or geomorphological interest. The protected feature or features and the conservation objectives for the MCZ are stated in the designation order for the MCZ, which provides statutory protection for these areas. Measures to restrict damaging activities will be implemented by the Marine Management Organisation (MMO) and other relevant organisations. As a public authority, the Secretary of State is bound by the duties in relation to MCZs imposed by sections 125 and 126 of the Marine and Coastal Access Act 2009.	The Swanscombe Marine Conservation Zone (MCZ) is situated approximately 7.5km upstream (west) of the Order Limits. Due to the distance and lack of pathways to impact on MCZ features, it has been agreed with the MMO that an MCZ assessment is not required to consent the activities of the Project. For completeness, the designated elements of the MCZ are still considered in the assessment of effects presented in Chapter 9: Marine Biodiversity in the Environmental Statement (Application Document 6.1).
5.31 NPSNN	Sites of regional and local biodiversity and geological interest (which include Local	Chapters 8: Terrestrial Biodiversity, 9: Marine Biodiversity and 10: Geology and Soils of the Environmental Statement (Application Document

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	Geological Sites, Local Nature Reserves and Local Wildlife Sites and Nature Improvement Areas) have a fundamental role to play in meeting overall national biodiversity targets, in contributing to the quality of life and the well-being of the community, and in supporting research and education. The Secretary of State should give due consideration to such regional or local designations. However, given the need for new infrastructure, these designations should not be used in themselves to refuse development consent.	6.1) provide an assessment of the likely significant effects on regionally and locally designated sites of ecological and geological conservation importance. Section 8.6 of ES Chapter 8: Terrestrial Biodiversity (Application Document 6.1) presents the assessment of likely significant effects on terrestrial ecological features of local and county importance. Habitat losses anticipated for locally designated sites over the construction phase are summarised within Tables 8.29 and 8.33 within ES Chapter 8: Terrestrial Biodiversity (Application Document 6.1). The Project has sought to minimise these impacts as far as practicable and, in a number of cases, these losses would be temporary, with habitats expected to re-establish within two to five years following completion of the proposed works. Extensive compensation habitat creation is proposed (as detailed within the oLEMP (Application Document 6.7)), and the Project has been designed specifically to support the fundamental role that sites of regional and local biodiversity interest have to play in meeting biodiversity targets. This includes, for example, in the case of Blackshots Nature Area the creation of 40ha of grassland habitat, alongside translocation of species. Section 9.6 of Environmental Statement Chapter 9: Marine Biodiversity (Application Document 6.1) concludes that the project would have no significant adverse impact upon marine habitats and communities of local importance. Section 10.6 of Environmental Statement Chapter 10: Geology and Soils (Application Document 6.1) concludes that the Project would have a neutral effect on local geological sites. The Project has sought to avoid significant harm to biodiversity and enhance the wider network of habitats in the longer term. The measures within the EMP (Application Document 6.2) will achieve permanent habitat gain in accordance with the policies within the NPSNN.

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5.32 NPSNN	Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost it cannot be recreated. 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. Aged or veteran trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided. Where such trees would be affected by development proposals, the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons for this.	Chapter 5 of this Planning Statement: Project Evolution and Alternatives, describes the route optioneering undertaken prior to the Preferred Route Announcement in April 2017 and since. The optioneering process involved considering each of the proposed routes against a number of criteria, including achieving traffic objectives, cost, practical feasibility and impacts on the environment, including ancient woodlands. For example, Route 4 (west from junction 29 and through Stanford-le-Hope to the tunnel crossing) was not progressed during the route selection process, in part due to environmental impacts on ancient woodland along the route, north of the River and on Coalhouse Fort. When taking all of the criteria into account, the preferred route was considered to be the most appropriate as it offered a future-proofed crossing of the River Thames, performed well against the Scheme Objectives, and was technically feasible. Chapter 3: Assessment of Reasonable Alternatives in the Environmental Statement (ES) (Application Document 6.1) considers the impact of the Project on ancient woodland in the route selection process and how the width of the A2 road corridor was reduced after Statutory Consultation and engagement with stakeholders in 2018 to limit the amount of ancient woodland from the Shorne and Ashenbank Woods SSSI to be removed. The Chapter also explains that the Project design at junction 29 was progressed to avoid areas of ancient woodland around this junction. Chapter 5 of this Planning Statement sets out how, prior to Statutory Consultation in 2018, 2020 and again in 2022 before submission of this document, a review was undertaken to consider the changes in the Project design south of the River Thames, including increased encroachment into the AONB and Ancient Woodland along the A2. These reviews considered whether the route south of the River chosen at Preferred route announcement (Western Southern Link (WSL)) remained the most appropriate compared to the other route considered (Eastern Southern Link (ESL)). The 2020 review identified that the ESL avoided impacts to Claylane Wood, which is impacted by the WSL, but impacts on

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Shorne and Ashenbank Woods SSSI and would result in the loss of approximately 50% of Great Crabbles Wood SSSI (ancient woodland), as well as areas of Local Wildlife Sites (some of which support ancient woodland) and an area of ancient woodland compensatory planting immediately south of Great Crabbles Wood – adjacent to the A289. The review concluded that the balance of the community and environmental impacts of the ESL remain more significant than the overall balance of impacts of the WSL. Chapter 7: Landscape and Visual and Chapter 8: Terrestrial Biodiversity of the ES (Application Document 6.1) have considered the impact of the Project on the following: • Likely significant permanent habitat loss at Shorne and Ashenbank Woods SSSI, including the loss of ancient woodland • Likely significant permanent habitat loss within an area of ancient woodland west of M25 junction 29 • Loss of veteran trees In total, the Project would result in the loss of 7.36ha of ancient woodland and ten veteran trees. To compensate for the loss of this woodland, 45.45ha of woodland planting would be created, as shown on Figure 2.1: Order Limits and Route Alignment and Figure 2.4: Environmental Masterplan of the ES (Application Document 6.2). Other forms of mitigation are also proposed to protect maintained ancient woodland from construction impacts. Temporary fencing would be used where necessary to prevent access to retained important habitats, including ancient woodland and to protect from accidental damage and to mitigate species mortality. Good practice mitigation including temporary fencing, dust suppression and surface water pollution runoff treatment would safeguard the retained areas of ancient woodland from likely effects during construction.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		A minimum of 30 individual specimen trees would be planted as replacement for the total 10 lost veteran trees, 15 south of the River Thames and 15 to the north of the River Thames, the locations of which would be agreed with the Secretary of State (SoS) following consultation with relevant local authorities. Additionally, where removal of veteran trees is required, the intact hulks of lost veteran trees would be relocated in close proximity to a nearby veteran tree, woodland or parkland area in accordance with government standing advice prepared by Natural England and the Forestry Commission (2018). This would provide opportunity for those invertebrates and fungi residents within the tree to relocate. Chapter 3 of the Need for the Project (Application Document 7.1) sets out the national need for the Project, as responded to in paragraphs 2.1 to 2.10 above. The Project sits within a wider package of works for the strategic road network in the south-east of England, as described within RIS 1. The chapter concludes that there is an identified national need for the Project. The Need for the Project explains the benefits of the Project as being the following: • The considerable journey time savings benefits • Enhanced connectivity • Improved productivity of businesses in the Lower Thames and wider region due to faster and more reliable journeys and improved accessibility • Significantly reduced congestion at the Dartford Crossing • Provision of substantial additional capacity and new route options across the Thames east of London

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.33 NPSNN	Development proposals potentially provide many opportunities for building in beneficial biodiversity or geological features as part of good design. When considering proposals, the Secretary of State should consider whether the applicant has maximised such opportunities in and around developments. The Secretary of State may use requirements or planning obligations where appropriate in order to ensure that such beneficial features are delivered.	Chapter 8: Terrestrial Biodiversity and Chapter 10: Geology and Soils of the Environmental Statement (ES) (Application Document 6.1) describe the biodiversity and geological mitigation and enhancements proposed for the Project. These measures seek to maximise the opportunity for the Project to benefit biodiversity or geological habitats by improving existing habitat. The following measures are proposed in order to build in beneficial biodiversity to the scheme: • North of the River Thames the new habitats (in the form of 'stepping stone sites') have been designed to connect existing biodiverse areas. • 97ha of new habitat creation adjacent to Coalhouse Fort (see Figure 2.4: Environmental Masterplan (Application Document 6.2)) include a number of different habitats created to enhance the environment adjacent to the River Thames, while also increasing the area's biodiversity value. It would comprise wetland habitat (refer to Design Principles (Application Document 7.5), Clause no. S9.13), together with some areas of ponds, wet grassland and scrapes. • Around the north portal area 46ha of habitat designed for terrestrial invertebrates and reptiles, amongst other species will comprise open mosaic habitat, with wildflower and scrub planting using species mixes specifically designed to support the range of terrestrial invertebrate species currently recorded here including shrill carder bee, numerous south-facing bunds constructed from nutrient poor substrate and bare ground patches (see the Design Principles (Application Document 7.5), Clause no. LSP.11, LSP.22) (see Figure 2.4: Environmental Masterplan (Application Document 6.2)). The Green Infrastructure Study (Appendix H of this Statement) provides the 'bigger picture' for the delivery of large-scale green infrastructure as part of the Project connecting and enhancing communities and wildlife at the sub-regional and city-scale. The Project proposes seven multi-

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		functional green bridges, restoration of the historical fen landscape and the creation of a Mardyke Valley Country Park. In addition, the Green Infrastructure Study considers that habitat creation required for mitigation, should be designed in a way that would also provide benefit to ecological features by providing new areas of planting that would improve connections between existing habitats. Figure 2.4: Environmental Masterplan of the ES (Application Document 6.2) identifies the embedded environmental mitigation measures for the Project including proposals affecting the functionality and connectivity of the Green Infrastructure network. See also further details in response to paragraphs 5.22 – 5.23 above. National Highways has committed to achieving no net loss in biodiversity by the end of Road Investment Strategy (RIS) 2 period (2020-2025) and will work towards net biodiversity gain by 2040. Funding for the Project falls within RIS 2 and RIS 3 (2025-2030). Appendix 8.21: Biodiversity Metric Calculations to Chapter 8: Terrestrial Biodiversity of the ES (Application Document 6.1) presents the results of a biodiversity metric assessment to support the Environmental Impact Assessment (EIA) of the Project. While, overall this demonstrates there would be a net loss of biodiversity as calculated by the metric (paragraph 7.2.1 of Appendix 8.21) (Application Document 6.3) this needs to be balanced against the new areas of habitat and landscaped creation proposed as part of the Project (which are not counted in the metric) and against the benefits of the Project as a whole (outlined in Application Documents 7.1 Need for the Project and 7.20 Benefits and Outcomes document).
5.34 NPSNN	Many individual wildlife species receive statutory protection under a range of legislative provisions.	No response required.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.35 NPSNN	Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales and therefore requiring conservation action. The Secretary of State should ensure that applicants have taken measures to ensure these species and habitats are protected from the adverse effects of development. Where appropriate, requirements or planning obligations may be used in order to deliver this protection. The Secretary of State should refuse consent where harm to the habitats or species and their habitats would result, unless the benefits of the development (including need) clearly outweigh that harm.	Chapter 8: Terrestrial Biodiversity of the Environmental Statement (ES) (Application Document 6.1) considers all ecological features, identifying those that are of principal importance and assesses the residual effects as a result of the Project. Ecology and nature conservation have been assessed in accordance with National Highways' Design Manual for Roads and Bridges (DMRB) LA 108 Biodiversity and DMRB LA 105 Air Quality standards. The mitigation and enhancement measures to be implemented have been incorporated into Appendix 2.2: Register of Environmental Actions and Commitments (REAC) (Application Document 6.3) of the ES which consolidates the mitigation commitments arising from the EIA process. Habitat loss and gains associated with the Project are summarised in Section 8.6 of Chapter 8. Overall, the Project would result in an increase of semi-natural habitats which would contribute to enhancing the natural environment over time. The benefits in terms of habitat creation have therefore been considered to outweigh the losses.
5.36 NPSNN	Applicants should include appropriate mitigation measures as an integral part of their proposed development, including identifying where and how that: • during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works; • during construction and operation, best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised (including as a consequence of transport access arrangements); • habitats will, where practicable, be restored after construction works have finished;	**Minimising Construction Areas** The Project has worked collaboratively to ensure construction activities are confined to the minimum area and minimise disturbance and/or damage to species and habitats as far as is practicable. Construction activities would avoid areas of retained vegetation as shown on Figure 2.4: Environmental Masterplan (Application Document 6.2) (REAC Ref. TB003). Where opportunities exist, compounds sites are to be established through re-purposing existing work sites (Marling Cross) or will be re-purposed following construction (the A2 compound which will be re-used as a car park serving WCH routes). **Best Practice Measures** • The best practice measures proposed over the construction phase are described in Section 8.5 of ES Chapter 8: Terrestrial Biodiversity (Application Document 6.1) and Section 9.5 of ES Chapter 9: Marine Biodiversity. They include, among other things:

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	• developments will be designed and landscaped to provide green corridors and minimise habitat fragmentation where reasonable; • opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals, for example through techniques such as the 'greening' of existing network crossing points, the use of green bridges and the habitat improvement of the network verge.	• Pre-construction surveys to inform detailed design of protected species mitigation strategies, including licensable species, and to avoid the spread of Invasive and Non-native species. • Surface water management. • Dust Suppression • Protective fencing • Noise and vibration controls • Pollution control systems at work sites • Habitat Re-instatement • Land temporarily impacted by works to divert utilities would be reinstated to its former condition and composition upon completion, as far as reasonably practicable, unless otherwise specified in the Environmental Masterplan (Figure 2.4, Application Document 6.2) or under the terms of article 35 of the draft DCO, which sets out the temporary possession powers (REAC reference LV002). • Bankside vegetation would be reinstated at culvert entries and exits following the completion of construction works as soon as conditions are suitable for planting (having regard also to the need to preserve continued fish passage) (REAC references RDWE009 and RDWE021). • Hedgerow habitat lost during construction would be compensated by creating new hedgerows at locations shown on the Environmental Masterplan, using native species of local provenance. Planting would be undertaken as early in the construction programme as reasonably practicable, having regard for the completion of potentially damaging construction activities within and adjacent to the planting area, and seasonal requirements for planting **Green Corridors and Minimising Habitat Fragmentation**

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		The route corridor has been designed to be a biodiverse wildlife corridor connecting suitable habitats throughout the wider landscape (see the Design Principles (Application Document 7.5), Clause no. PLA.05). During construction where below ground utilities diversions are required, watercourses would be crossed by using trenchless techniques, in order to avoid disturbance to channel form, flow regimes and riparian habitats and species, unless other techniques are agreed with the Environment Agency or Lead Local Flood Authorities, (LLFA), where relevant. Mosaic habitats be provided east of the Project route and south of Muckingford Road green bridge as defined in the Environmental Masterplan (Application Document 6.2, Figure 2.4). This is to provide habitat connectivity between Tilbury Fields and Linford open mosaic habitat areas. Amongst other measures to further reduce habitat fragmentation the Mardyke viaduct has been designed to ensure sufficient headroom for species and false cuttings are proposed along the Project route. Design Principles (Application Document 7.5), Clause no. PRO.04, PLA.05, LSP.09, LSP.20, LSP.21). **Other Enhancements** Significant areas of new habitat are proposed to be created along the Project route, most notably on sites adjacent to Coalhouse Fort (97ha) and Tilbury Fields (46ha). These habitats have been designed to enhance the environment adjacent to the River Thames, to provide for terrestrial invertebrates and reptiles, as well as being suitable for a number of other species. Green bridges would be provided in seven locations along the route and planting shall tie in with the broader landscape to ensure connectivity. These habitats would act as areas from which species can disperse and colonise the Project landscape design and the wider landscape following the completion of construction (Figure 2.4: Environmental Masterplan

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		(Application Document 6.2) and the Design Principles, Clause no. LSP.22 (Application Document 7.5).
5.37 NPSNN	The Secretary of State should consider what appropriate requirements should be attached to any consent and/or in any planning obligations entered into in order to ensure that mitigation measures are delivered	No response required.
5.38 NPSNN	The Secretary of State will need to take account of what mitigation measures may have been agreed between the applicant and Natural England and/or the MMO, and whether Natural England and/or or the MMO has granted or refused, or intends to grant or refuse, any relevant licences, including protected species mitigation licences.	The Project has engaged with both Natural England and the MMO during the design and development process. Mitigation agreed with Natural England and the MMO would be included within the Register of Environmental Actions and Commitments (REAC) (Application Document 6.3, Appendix 2.2 of the Environmental Statement) and within their respective Statements of Common Ground (Application Document 5.4). The Summary of Envisaged Statements of Common Ground (Application Document 7.3) sets out the intention to prepare and agree statements of common ground with both Natural England and the MMO (alongside other stakeholders). The document sets out how the Project has been working, and is continuing to work, proactively with stakeholders to develop these statements of common ground that would set out matters that have been agreed (including mitigation), and to identify where agreement has not been reached. These statements would continue to be developed throughout the examination, before a final statement is agreed by the end of the examination period. Appendix A: Permits and Consents that May be Required of the Consents and Agreements Position Statement (Application Document 3.3) sets out the licences that may be required, and includes information on what these are for, the requirements of each licence and the Projects current position for each.
Waste Management		

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.39 – 5.41 NPSNN	Government policy on hazardous and non-hazardous waste is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Where this is not possible, waste management regulation ensures that waste is disposed of in a way that is least damaging to the environment and to human health. • Sustainable waste management is implemented through the "waste hierarchy": • · prevention; • · preparing for reuse; • · recycling; • · other recovery, including energy recovery; and • · disposal Large infrastructure projects may generate hazardous and non-hazardous waste during the construction and operation. The Environment Agency's environmental permitting regime incorporates operational waste management requirements for certain activities. When an applicant applies to the Environment Agency for an environmental permit, the Agency will require the application to demonstrate that processes are in place to meet all relevant permit requirements.	Introductory factual remarks. No response required.
5.42 NPSNN	The applicant should set out the arrangements that are proposed for managing any waste	Chapter 11: Material Assets and Waste of the Environmental Statement (ES) (Application Document 6.1) sets out the proposed arrangements for

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	produced. The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental outcome.	managing waste produced by the Project. Material use and waste generation is expected during both construction and operation of the Project, with considerably more waste estimated to be generated during the construction phase. Design mitigation includes identifying, securing and using materials onsite, reducing the need to import fill materials. Estimates of materials to be generated onsite and used during construction are presented in Appendix 11.4: Material Assets Supporting Data of the Environmental Statement (Application Document 6.3) The Contractors would be required to produce a Site Waste Management Plan (or equivalent) setting out procedures for the characterisation, management and monitoring of waste arisings and to ensure the waste hierarchy is implemented with opportunities to reduce waste generation or improve recovery/recycled rates. Good practice mitigation forms part of the Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3) with the Project's commitments recorded in the Register of Environmental Actions and Commitments (REAC). The Contractors would be expected to use the methodology contained within the Excavated Materials Assessment (Appendix 11.1 of the ES, Application Document 6.3) both in validating available offsite capacity at third-party potential receiver sites for bulk inert excavated materials, including stone, chalk and tunnel-related arisings and in identifying opportunities for reuse whilst complying with legislation and relevant permitting processes. Designing out the volume of materials to be used through the design process includes removing the bridge at Hornsby Lane, reducing the number of lanes south of the M25, widening the existing Rectory Road rather than constructing a new highway, and reducing the span of the Tilbury Viaduct.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.43 NPSNN	The Secretary of State should consider the extent to which the applicant has proposed an effective process that will be followed to ensure effective management of hazardous and non-hazardous waste arising from the construction and operation of the proposed development. The Secretary of State should be satisfied that the process sets out: • any such waste will be properly managed, both on-site and off-site • the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arising's should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arising's in the area; and • adequate steps have been taken to minimise the volume of waste arising's, and of the volume of waste arising's sent to disposal, except where an alternative is the most sustainable outcome overall	Chapter 11: Materials and Waste of the ES (Application Document 6.1) shows that waste from the Project can be dealt with appropriately by the waste infrastructure, which is, or is likely to be, available. Appendix 11.1: Excavated Materials Assessment to Chapter 11: Material Assets and Waste of the ES (Application Document 6.3) demonstrates that there is sufficient capacity at suitable potential sites to manage excavated materials. It also provides a mechanism for assessing any additional suitable potential sites for the treatment, handling or use of excavated material. Paragraph 11.6.44 of Chapter 11 of the ES (Application Document 6.1) notes that the Project would use less than 1% of the inert and non-hazardous landfill capacity in England, which would be below the threshold to trigger a significant effect. However, the Project would use more than 1% of inert and non-hazardous landfill capacity in the study area. This is above the threshold outlined within DMRB LA 110 Material assets and waste (Highways England, 2019), and is judged to be moderate adverse effect and therefore significant. However, this assessment of significance uses the criteria set out within DMRB LA 110 (Highways England, 2019), which only reports against landfill capacity, not reuse, recycling or recovery within the study area. With regard to paragraph 5.43 of the NPSNN, the assessment demonstrates that an adverse effect on the capacity of existing waste management facilities, as a whole, to deal with other waste arisings in the area would not occur. The Project would use approximately 2.59% of inert and non-hazardous landfill capacity within the study area, which includes a landfill site located within the Order Limits. If this site was excluded from the assessment, the Project would use approximately 0.94% of inert and non-hazardous landfill capacity within the study area, which would be less than the 1% threshold required to trigger a significant effect. In addition, the Project would use only 0.5% of the annual recycling/treatment

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		and/recovery capacity in the study area (paragraph 11.6.45 of Chapter 11). Section 11.5 of Chapter 11 also outlines the steps taken towards waste minimisation through design to divert waste from disposal, except where an alternative is the most sustainable outcome overall. Table 11.12 in Chapter 11 provides details of the waste reduced as a result of design changes. Onsite and offsite waste management arrangements, targets and Contractors performance are detailed in the Environmental Statement (Application Document) in line with essential mitigation and good practice and forming part of the Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3). An outline Site Waste Management Plan (or equivalent) and an outline Materials Handling Plan would be produced by the Contractors setting out procedures for the characterisation, management and monitoring of wastes arisings and would contain initial waste forecasts of construction waste listed by waste type, waste code, source and anticipated weight. All wastes entered would have a final destination entered and the offsite destination, i.e. reuse, recycling, recovery or disposal. Waste management offsite would be completed under the Duty of Care (section 34 of the Environmental Protection Act 1990), with all waste transported using licensed carriers and taken only to appropriately permitted facilities. In line with the initial calculations presented in Environmental Statement Appendix 11.5: Waste Assessment Supporting Data (Application Document 6.3) the Contractors would be required to demonstrate that sufficient space has been allowed for within the construction working areas for stockpiles for topsoil, contaminated material (for later offsite management), materials to be reused, excess clean material and imported materials for construction. This would enable the segregation of waste types, thus preventing the mixing of hazardous and non-hazardous

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		wastes and to enhance recovery rates by minimising degradation, damage and loss. In line with the requirements of Design Manual for Roads and Bridges (DMRB) LA 110 Material Assets and Waste (Highways England, 2019), enhancement opportunities shall be identified, reported and implemented during detailed design and construction to reduce the Project's material demand and amount of waste sent for final disposal in landfill.
5.44 – 5.45 NPSNN	5.44 Where necessary, the Secretary of State should use requirements or planning obligations to ensure that appropriate measures for waste management are applied. 5.45 Where the project will be subject to the Environment Agency's environmental permitting regime, waste management arrangements during operations will be covered by the permit and the considerations set out in paragraphs 4.48 to 4.56 will apply.	Responses provided above.
Civil and Military Aviation and Defence Interests		
5.46 – 5.55 NPSNN	Civil and military aerodromes, aviation technical sites, and other types of defence interests (both onshore and offshore) can be affected by new national networks infrastructure development. UK airspace is important for both civilian and military aviation interests. It is essential that the safety of UK aerodromes, aircraft and airspace is not adversely affected by new national networks infrastructure. Similarly, aerodromes can have important economic and social	The Project would not impact on civil or military aviation or other defence assets.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	benefits, particularly at the regional and local level. Commercial civil aviation is largely confined to designated corridors of controlled airspace and set approaches to airports. However, civilian leisure and military aircraft may often fly outside of 'controlled air space'. The approaches and flight patterns to aerodromes are not necessarily routine and can be irregular owing to a variety of factors including the performance characteristics of the aircraft concerned and the prevailing meteorological conditions. Certain civil aerodromes, and aviation technical sites, selected on the basis of their importance to the national air transport system, are officially safeguarded in order to ensure that their operation is not inhibited by new development. A similar official safeguarding system applies to certain military aerodromes and defence assets, selected on the basis of their strategic importance. Areas of airspace around aerodromes used by aircraft taking off or on approach and landing are described as "obstacle limitation surfaces" (OLS) and defined according to criteria set out in relevant Civil Aviation Authority (CAA) guidance. Aerodromes that are officially safeguarded will have CAA certified Safeguarding maps showing the OLS. The certified safeguarding maps depicting the OLS and other criteria (e.g. to minimise	

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	"birdstrike" hazards) are deposited with the relevant local planning authorities. Circular 1/2003 provides advice to planning authorities on the official safeguarding of aerodromes and includes a list of the aerodromes which are officially safeguarded. The Circular and CAA guidance also recommends that the operators of aerodromes which are not officially safeguarded should take steps to protect their aerodrome from the effects of possible adverse development by establishing an agreed consultation procedure between themselves and the local planning authority or authorities. There are also “Public Safety Zones” at the end of runways of the busiest airports in the UK, within which development is restricted to minimise risks to people on the ground in the event of an aircraft accident on take-off or landing. Advice is provided on Public Safety Zones in Circular 01/2002. The military Low Flying system covers the whole of the UK and enables low flying activities as low as 75m (mean separation distance). A considerable amount of military flying for training purposes is conducted at as low as 30m in designated Tactical Training Areas (TTAs) in mid Wales, Cumbria, the Scottish Border region and in the Electronic Warfare Range in the Scottish Border area. New national networks infrastructure may cause obstructions in Ministry of Defence	

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	(MoD) low flying areas. Safe and efficient operations within UK airspace is dependent upon communications, navigation and surveillance (CNS) infrastructure, including radar (often referred to as 'technical sites'). National Networks infrastructure development may interfere with the operation of radar by limiting the capacity to handle air traffic, and aircraft landing systems. It may also act as a reflector or diffractor of radio signals on which navigational aids rely (an effect which is particularly likely to arise when large structures are located close to radar installations). The MoD operates military training areas, military danger zones (offshore Danger and Exercise areas), military explosives storage areas and TTAs. There are extensive Danger and Exercise Areas across the UK Continental Shelf Area (UKCS) for military firing that are essential for national defence. Other operational defence assets may be affected by new development, e.g. the maritime acoustic facilities used to test and calibrate noise emissions from naval vessels, such as at Portland Harbour. The MoD also operates Air Defence radars and Meteorological radars which have wide coverage over the UK (onshore and offshore). It is important that new national networks infrastructure does not significantly impede or compromise the safe and effective use of any defence assets.	

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	Where the proposed development may have an effect on civil or military aviation and/or other defence assets, an assessment of potential effects should be carried out.	
5.56 - 5.58 NPSNN	The applicant should consult the MoD, CAA, National Air Traffic Services (NATS) and any aerodrome – licensed or otherwise – likely to be affected by the proposed development in preparing an assessment of the proposal on aviation or other defence interests. Any assessment on aviation or other defence interests should include potential impacts during construction and operation of the project upon the operation of CNS infrastructure, flight patterns (both civil and military), other defence assets and aerodrome operational procedures. If any relevant changes are made to proposals for an NSIP during the pre-application period or before the end of the examination of an application, it is the responsibility of the applicant to ensure that the relevant aviation and defence consultees are informed as soon as reasonably possible.	The National Air Traffic Service (NATS) has been consulted on the Project as part of the Environmental Scoping consultation undertaken by the Planning Inspectorate. In response, NATS advised that, 'The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.'
5.59 – 5.66 NPSNN	Response considered unnecessary as this relates to civil/military aviation and defence assets	No response required.
Coastal Change		
5.67 – 5.69 NPSNN	Infrastructure development close to the coast may result in direct and indirect effects on the	Introductory paragraphs. No response required.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	coastline, seabed, marine ecology and biodiversity and historic environment.	
5.70 NPSNN	This section only applies to national networks infrastructure projects situated on or near the coast. The sections on biodiversity and geological conservation, flood risk, the historic environment and climate change adaptation, including the increased risk of coastal erosion, are also relevant, as is advice on access to coastal recreation sites and features in the section on land use	The Project is not sited on or near the coast, therefore, no response is required.
5.71 NPSNN	Applications for development in a Coastal Change Management Area (CCMA) should make it clear why there is a need for it to be located in a CCMA. For developments in a CCMA, applicants should undertake an assessment of the vulnerability of the proposed development to coastal change, taking account of climate change, during the project's operational life.	The Project is not located within a Coastal Change Management Area and therefore no response is required.
5.72 NPSNN	For any projects involving dredging or disposal into the sea, the applicant should consult the MMO. The applicant should also consult the MMO on projects which could impact on coastal change, since the MMO may also be involved in considering other projects which may have related coastal impacts.	Dredging is not required for the construction or operation of the Project. Due to the small-scale nature of the works in relation to the marine environment, it has been concluded that the Project would not influence coastal protection. The Marine Management Organisation (MMO) has been engaged throughout the EIA process, with discussions on a range of issues affecting the River Thames and the foreshore arising from the Project. This has included the marine monitoring and modelling programme, the need for Marine Conservation Zone (MCZ) and Marine Strategy Framework Directive assessments, proposed dewatering, discharge and

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		intake structures in the Project design and a programme for the submission of the draft Deemed Marine Licence. A record of outstanding issues with the MMO will be presented in a Statement of Common Ground with the MMO (Application Document 5.4).
5.74 NPSNN	The applicant should be particularly careful to identify any effects of physical changes on the integrity and special features of Marine Conservation Zones, candidate marine Special Areas of Conservation (SACs), coastal SACs and candidate coastal SACs, coastal Special Protection Areas (SPAs) and potential coastal SPAs, Ramsar sites, Sites of Community Importance (SCIs) and potential SCIs and sites of Special Scientific Interest. For any projects affecting the above marine protected areas, the applicant should consult Natural England and where appropriate, for cross-boundary impacts, Natural Resource Wales and Scottish Natural Heritage, at an early stage.	Chapter 9: Marine Biodiversity of the Environmental Statement (Application Document 6.1) identifies three European designated sites (Southern North Sea SAC, Thames Estuary and Marshes Ramsar site and Thames Estuary and Marshes SPA) alongside six nationally designated sites (Swanscombe MCZ, South Thames Estuary and Marshes SSSI, Mucking Flats and Marshes SSSI, Holehaven Creek SSSI, West Thurrock Lagoon and Marshes SSSI and Swanscombe Peninsula SSSI) that have potential to be impacted by the Project's activities. Subsequent engagement with the MMO has resulted in agreement that an MCZ assessment is not required as the Project would be unlikely to affect the MCZ in the Thames Estuary.
5.75 – 5.76 NPSNN	Response considered unnecessary as this relates to applications within a CCMA.	No response required
5.77 NPSNN	The Secretary of State must have regard to the Marine Policy Statement, as provided for in the Marine and Coastal Assess Act 2009. They may also have regard to any relevant Shoreline Management Plans and Coastal Change Management Areas.	The Project would not impact on the coast/marine environment directly as both portals will be located away from the coast. The construction of the tunnel would be undertaken without any disturbance of the seabed. Minimal operational development (discharge and intake structures within the existing flood defence) is proposed within the Marine Environment and therefore it would not be necessary to consider the policies within the Marine Plan in this case.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.78 NPSNN	Substantial weight should be attached to the risks of flooding and coastal erosion. The applicant must demonstrate that full account has been taken of the policy on assessment and mitigation in paragraphs 5.91- 5.114 of this NPS, taking account of the potential effects of climate change on these risks.	Responses provided in response to paragraphs 5.90 – 5.114 of the NPS below.
5.79 NPSNN	Applicants should propose appropriate mitigation measures to address adverse physical changes to the coast in consultation with the MMO, the Environment Agency, Natural England, Natural Resource Wales, Scottish Natural Heritage, Local Planning Authorities, other statutory consultees, Coastal Partnerships and other coastal groups, as it considers appropriate. The Secretary of State should consider whether the mitigation requirements put forward by an applicant are acceptable and will be delivered and whether requirements should be attached to any grant of development consent in order to secure their delivery.	The Marine Management Organisation (MMO) has been engaged throughout the EIA process, with discussions on a range of issues affecting the River Thames and the foreshore. A programme of engagement has also been undertaken with the Environment Agency, which has considered all aspects of coastal protection with respect to proposed construction and operational activities. Due to the small-scale nature of the proposed works in relation to the marine environment, it has been concluded that the Project would not adversely influence the coast or any associated coastal protection.
5.80 NPSNN	Response considered unnecessary as this relates to applications within a CCMA.	No response required.
Dust, odour, artificial light, smoke, steam		
5.81 NPSNN	As well as noise and vibration (paragraphs 5.186 to 5.200) the construction and operation of national networks infrastructure has the potential to create a range of emissions such	Factual statement. No response required.

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	as odour, dust, steam, smoke and artificial light. All have the potential to have a detrimental impact on amenity or cause a common law nuisance or statutory nuisance under Part III, Environmental Protection Act 1990. Note that pollution impacts from some of these emissions (e.g. dust, smoke) are covered in the section on air emissions and that these and others (e.g. odour) may also be covered by pollution control or other environmental consenting regimes so that paragraphs 4.48 to 4.56 and 5.3 to 5.15 will apply.	
5.82 NPSNN	Because of the potential effects of these emissions and in view of the availability of the defence of statutory authority against nuisance claims described previously, it is important that the potential for these impacts is considered by the applicant in their application, by the Examining Authority in examining applications and by the Secretary of State in taking decisions on development consents.	The nature of the Project is such that no impacts arising from odour, smoke or steam are predicted. A Statement of Statutory Nuisance (Application Document 6.6) has been prepared to identify whether the Project engages in one or more of the statutory nuisances set out in section 79 (1) of the Environmental Protection Act 1990, and if so, how National Highways would mitigate or limit such nuisances. The Statement concludes that the Project has the potential to engage in five of the statutory nuisances listed in the Environmental Protection Act 1990. These comprise dust arising from industrial, trade or business premises, accumulation or deposits, artificial light, noise from premises and noise from vehicles / machinery / equipment. However, with the appropriate mitigation measures in place, none of the statutory nuisances identified are predicted to arise during the construction or operation of the Project.
5.83 NPSNN	For nationally significant infrastructure projects of the type covered by this NPS, some impact on amenity for local communities is likely to be	The impacts of the Project on amenity are described in Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1) which considers the potential effects on the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	unavoidable. Impacts should be kept to a minimum and should be at a level that is acceptable.	economy, property, community facilities, development land and businesses including agricultural holdings. The assessment has also considered the potential effects on walkers, cyclists and horse riders (WCH). The majority of adverse impacts would occur over the construction phase and (with the exception properties at risk from demolition or land-take as a result of the Project) would be localised and temporary in nature. No adverse air quality impacts are predicted over the construction phase. A range of mitigation measures to manage potential effects have been proposed, including good practice mitigation and essential mitigation. The most significantly affected receptors would be properties at risk from demolition or acquisition as a result of the Project. Mitigation measures relate to appropriate compensation mechanisms. Community land would also be affected by virtue of temporary possession and permanent acquisition of land. However, replacement land would be provided where permanent effects have been identified. A range of enhancement opportunities have been identified to improve the Public Rights of Way (PRoW) network through enhanced facilities, the creation of missing links and provision of open space. The project would also achieve improvements in relation to noise and vibration, work and training and air quality over specific areas, and would therefore deliver significant benefits to local communities in the longer term. Sensitive communities and populations have been identified as part of the human health assessment. Effects on these populations are described in further detail within the Health and Equalities Impact Assessment (Application Document 7.10).
5.84 - 5.87 NPSNN	Where the development is subject to an EIA, the applicant should assess any likely significant effects on amenity from emissions of odour, dust, steam, smoke and artificial light	The nature of the project is such that no significant impacts in relation to steam or smoke are predicted. A Scoping Report (Highways England, 2017) was issued to the Planning Inspectorate on 2 November 2017, setting out the proposed approach to

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	and describe these in the Environmental Statement. In particular, the assessment provided by the applicant should describe: • the type and quantity of emissions; • aspects of the development which may give rise to emissions during construction, operation and decommissioning; • premises or locations that may be affected by the emissions; • effects of the emission on identified premises or locations; and • measures to be employed in preventing or mitigating the emissions. The applicant is advised to consult the relevant local planning authority and, where appropriate, the Environment Agency about the scope and methodology of the assessment. The Secretary of State should be satisfied that all reasonable steps have been taken, and will be taken, to minimise any detrimental impact on amenity from emissions of odour, dust, steam, smoke and artificial light. This includes the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.	this Project's EIA. A Scoping Opinion received from the Secretary of State on 13 December 2017 included comments on the scope of assessment from the Planning Inspectorate and Statutory Environmental Bodies. These comments have been taken into account in the preparation of the Environmental Statement (Application Document 6.1). Section 5.3 of Chapter 5: Air Quality of the Environmental Statement (Application Document 6.1) sets out the consultation process for the Project and the engagement undertaken with the relevant local planning authorities and stakeholders to agree the methodology of the air quality impact assessment. Given the size of the Project and the location of receptors, the overall dust risk potential is rated 'large' and properties located within 200m of construction activities have the potential to be adversely affected by construction dust. However, ES Chapter 5: Air Quality (Application Document 6.1) concludes that these effects would be temporary in nature and suitably controlled using best practice measures. Proposed mitigation includes a range of measures to manage dust emissions. This includes wheel washing vehicles on entering and leaving the site, ensuring that spoil is covered and damp when being transported and using water suppression for dust control. No adverse dust impacts are predicted over the operational phase and therefore no mitigation is needed. Construction activity would involve excavation of varying depths with excavated materials potentially containing contaminants that may have a bad or strong smell. To ensure that there are no significant effects to local residents, appropriate mitigation has been proposed, such as storing odorous material as far away as possible from residential receptors and for this to be prioritised for removal as quickly as possible. Material that is odorous would be covered when transported from site and contaminated material that is odorous would be stockpiled separately to material that is non-contaminated.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		During construction, artificial lighting would be required at construction compounds to facilitate ongoing works. Although it is anticipated that artificial lighting may be perceived at some receptors during construction, this is not expected to give rise to an unacceptably harmful impact upon local amenity. The Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3) for the construction phase of the Project states that lighting would be designed, positioned and directed to prevent or minimise light disturbance to nearby residents, reduce light splay, ecological receptors, as well as motorists and rail and marine operations. This provision would apply particularly to sites where night working or security lighting would be required. For the operational phase of the Project, guidance would be taken from the Institution of Lighting Professionals' (2020) Guidance Notes for the Reduction of Obtrusive Light – Guidance Note 01/2020, which includes details of proposed embedded mitigation on light pollution, including measures such as minimising lighting column heights and using LED luminaires with reduced light spill to reduce the impact of lighting in the AONB.
5.88 NPSNN	If development consent is granted for a project, the Secretary of State should consider whether there is a justification for all of the authorised project (including any associated development) being covered by a defence of statutory authority against nuisance claims. If the Secretary of State cannot conclude that this is justified, then the defence should be disapplied, in whole or in part, through a provision in the Development Consent Order.	The Statement of Statutory Nuisance (Application Document 6.6) concludes that the Project does have the potential to engage five of the statutory nuisances listed in the Environmental Protection Act (EPA) 1990. Those which are of relevance to dust and light are as follows: • 'any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance;' • 'any accumulation or deposit which is prejudicial to health or a nuisance;' • 'artificial light emitted from premises so as to be prejudicial to health or a nuisance;'

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		However, with the appropriate mitigation measures in place, none of the statutory nuisances identified in section 79(1) of the EPA 1990 are predicted to arise during the construction or operation of the Project.
5.89 NPSNN	The Secretary of State should ensure the applicant has provided sufficient information to show that any necessary mitigation will be put into place. In particular, the Secretary of State should consider whether to require the applicant to abide by a Scheme of management and mitigation concerning emissions of odour, dust, steam, smoke, artificial light from the development to reduce any loss to amenity which might arise during the construction and operation of the development. A construction management plan may help codify mitigation.	Mitigation measures to control emissions of dust and artificial light during the construction and operational phases of the Project would be incorporated into the Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3) and Design Principles Document (Application Document 7.5) Contractors would be required to produce Site Waste Management, Materials Management, Noise and Vibration, and Construction Traffic Management Plans. There may also be additional topic management plans developed to cover various environmental issues requiring further measures and controls to be implemented during the construction phase. This may include air quality, ecology, geology and soil management, landscape and water. ES Chapter 5: Air Quality and Chapter 7: Landscape and Visual (Application Document 6.1) also provide specific mitigation on how emissions of dust, odours and artificial light would be managed and mitigated during the construction and operation of the Project. Over the operational phase, lighting will be designed, positioned and directed to prevent or minimise light disturbance to nearby residents, ecological receptors, as well as motorists and rail and marine operations. This provision will apply particularly to sites where night working or security lighting will be required. Mitigation for relevant environmental effects in relation to population and human health have been identified in Section 13.5 of ES Chapter 13: Population and Human Health (Application Document 6.1). Mitigation for impacts on residential amenity (for example from noise, air quality or visual impacts) are described within relevant chapters of the Environmental Statement (Application Document 6.1) including Chapter 5:

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Air Quality and Chapter 12: Noise and Vibration as well as Chapter 7: Landscape and Visual noted above. With regards to ecological receptors, the HRA considers the impacts of both dust and lighting upon European sites over both the construction and operational phase. In both cases, it is concluded that there is no scientific reason to think that measures that have proved successful on numerous projects in the past, protecting multiple habitat types and many people without significant complaint, would not be equally successful at mitigating lighting and dust effects on European site habitats.
Flood Risk		
5.90 NPSNN	Climate change over the next few decades is likely to mean milder wetter winters and hotter drier summers in the UK, while sea levels will continue to rise. Within the lifetime of nationally significant infrastructure projects, these factors will lead to increased flood risks in areas susceptible to flooding, and to an increased risk of flooding in some areas which are not currently thought of as being at risk. The applicant, the Examining Authority and the Secretary of State (in taking decisions) should take account of the policy on climate change adaptation in paragraphs 4.36 to 4.47.	The Project design has built-in climate change resilience in several ways. For example, the operational drainage design has included an allowance for the predicted changes to rainfall intensity and the implications for operational road drainage volumes and rates. These matters are addressed in the responses to paragraphs 4.36 to 4.47 of the NPSNN earlier in this table. The findings of the Flood Risk Assessment (FRA) in Appendix 14.6 (Application Document 6.3) of the Environmental Statement (ES) have informed the Project design to ensure its resilience to predicted climate change effects on river flows and water levels in the Thames Estuary. Key elements of the design that deliver this resilience are the vertical alignment of the main road, the design of watercourse crossings and additional protection measures for the tunnel portals. Climate change effects on groundwater resources have also been considered in the design of the Project. Further details are provided in Appendix 14.5: Hydrogeological Risk Assessment and Appendix 14.6: FRA of the ES (Application Document 6.3). Section 15.4: Baseline conditions of Chapter 15: Climate of the ES (Application Document 6.1) has demonstrated application of the latest UK

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		climate projections (UKCP18) (Met Office, 2019) during the estimated lifetime of the Project. Section 15.5: Project design and mitigation, and Section 15.6: Assessment of like significant effects of Chapter 15 consider how the Project accounts for the projected impacts on climate, along with appropriate mitigation and adaptation measures. Chapter 16: Cumulative Effects Assessment of the ES (Application Document 6.1) also takes account of climate change and its effects to ensure any mitigation is future-proofed.
5.91 NPSNN	The National Planning Policy Framework (paragraphs 100 to 104) makes clear that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. But where development is necessary, it should be made safe without increasing flood risk elsewhere. The guidance supporting the National Planning Policy Framework explains that essential transport infrastructure (including mass evacuation routes), which has to cross the area at risk, is permissible in areas of high flood risk, subject to the requirements of the Exception Test.	The Project is classed as essential infrastructure and project road will be in tunnel where it crosses the floodplain to the south of the River Thames, thereby avoiding above ground development in Flood Zone 3. The sequential test has been applied to ensure the Project lies within area at lower risk of flooding. Whilst parts of the Project fall within Flood Zone 3, (high probability of river and sea flooding) this is unavoidable as moving the Project road immediately to the east or west of its proposed location would not significantly change the amount of development in Flood Zone 3. Additionally, extending the tunnel to a point north of the floodplain would not be viable as such an arrangement would compromise future provision of a link between the A122 Lower Thames Crossing and the Port of Tilbury. In areas susceptible to flooding, the Project road would mostly be on embankments or viaducts (flood resilience measures). Where there are anticipated to be losses of flood storage volume, these have been compensated for where appropriate. The areas of the Project that lie in Flood Zone 3 benefit from existing flood defences and these are: • Adjacent to the River Thames (north)

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		• Near to the Mardyke (main river). In applying the exception test the FRA (Application document 6.3 ES Appendix 14.6) concludes that the wider sustainability benefits of the project outweigh flood risk. The flood risk management strategy considers the suite of flood alleviation measures required to make the Project safe without increasing flood risk elsewhere.
5.92 NPSNN	Applications for projects in the following locations should be accompanied by a flood risk assessment (FRA): Flood Zones 2 and 3, medium and high probability of river and sea flooding; Flood Zone 1 (low probability of river and sea flooding) for projects of 1 hectare or greater, projects which may be subject to other sources of flooding (local watercourses, surface water, groundwater or reservoirs), or where the Environment Agency has notified the local planning authority that there are critical drainage problems.	The Project crosses areas at high risk of flooding. Whilst the majority of the Order Limits are located in Flood Zone 1, parts of the route alignment lie in Flood Zone 3, indicating that there are areas of high as well as areas of low probability of flooding. A detailed Flood Risk Assessment (FRA) has been prepared to consider all sources of flood risk, the findings of which are detailed in Appendix 14.6 (Application Document 6.3) of the Environmental Statement.
5.93 NPSNN	This should identify and assess the risks of all forms of flooding to and from the project and demonstrate how these flood risks will be managed, taking climate change into account.	A Flood Risk Assessment (FRA) in Appendix 14.6 (Application Document 6.3) of the Environmental Statement has been prepared to demonstrate how flood risk to the Project would be managed now, and when taking future climate change into account. The FRA has also considered the flood risks generated as a result of the Project's construction. The sources of flood risk which have been scoped into the FRA are: • Fluvial and tidal flooding • Surface water (pluvial) flooding • Groundwater flooding

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		• Sewers • Water mains • Reservoirs • Canals • Combined sources The FRA has had regard to all the recent iterations of the relevant EA Guidance since publication of UK Climate Change Predictions 2018 (UKCP18) (Met Office, 2018). The FRA therefore considers changes to peak rainfall intensity, peak river flows and sea level rise (amongst other factors). The flood risk management strategy considers the suite of flood alleviation measures. In broad terms these comprise the following: • Flood mitigation measures; these comprise those measures necessary to manage floodwater levels in a way that reduces the impact of flooding. • Flood protection measures; these comprise targeted measures necessary to protect a development and its users during a flood event. • Flood resilience measures; these comprise those measures necessary to ensure that a development and its users are less vulnerable to the effects of flooding
5.94 NPSNN	In preparing an FRA the applicant should: • consider the risk of all forms of flooding arising from the project (including in adjacent parts of the United Kingdom), in addition to the risk of flooding to the project, and demonstrate how these risks will be managed and, where relevant, mitigated, so	As indicated above, a detailed Flood Risk Assessment (FRA) has been prepared in Appendix 14.6 (Application Document 6.3) of the Environmental Statement (ES) which has considered all sources of flood risk along with the impacts of climate change. The development is planned to have a minimum lifetime of 100 years and the FRA has assessed the upper end allowances for both the 1% and 3.3% AEP events for the 2070s epoch (2061 to 2125) in accordance with EA guidance.

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	that the development remains safe throughout its lifetime; • take the impacts of climate change into account, clearly stating the development lifetime over which the assessment has been made; • consider the vulnerability of those using the infrastructure including arrangements for safe access and exit; • include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular project; • consider if there is a need to remain operational during a worst case flood event over the development's lifetime; • provide the evidence for the Secretary of State to apply the Sequential Test and Exception Test, as appropriate	The FRA has been informed by extensive consultation with the Environment Agency and relevant Lead Local Flood Authorities (LLFA). They have also been consulted on the results of hydrological and hydraulic modelling of the Mardyke, the Tilbury Main and the influence of the tidal River Thames on the flow regimes of these watercourses. As illustrated in the FRA some areas within the Order Limits are in Flood Zone 3. As noted above, the Project has been subject to a detailed FRA, which provides the evidence required to satisfy the latter part of the Exception Test. Evidence in support of the first part of the Exception Test, regarding the sustainability benefits of the Project, is summarised in the Need for the Project (Application Document 7.1). The findings of the FRA have informed the Project design to ensure its resilience to predicted climate change effects on river flows and water levels in the Thames Estuary. Key elements of the design that deliver this resilience are the vertical alignment of the main road, the design of watercourse crossings and additional protection measures for the tunnel portals. Climate change effects on groundwater resources have also been considered in the design of the Project. Further details are provided in Appendix 14.5: Hydrogeological Risk Assessment and Appendix 14.6: FRA of the ES (Application Document 6.3). Section 15.5: Baseline conditions in Chapter 15: Climate of the Environmental Statement (Application Document 6.1) has demonstrated the application of the latest UK climate projections (UKCP18) (Met Office, 2019) during the estimated lifetime of the Project. National Highways sets out its objectives for flood risk in the Design Manual for Roads and Bridges (DMRB) LA 113 (Highways England, 2020). This document states that all projects on motorways and all-purpose trunk roads shall be designed to: • Remain operational and safe for users in times of flood • Result in no net loss of floodplain storage

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		• Not impede water flows • Not increase flood risk elsewhere The need for safe access and egress routes has been considered within Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) and Appendix 14.6 (Application Document 6.3) of the Environmental Statement. Flood mitigation measures identified comprise measures necessary to manage floodwater levels in a way that would reduce the impact of flooding on the road itself and elsewhere within the catchment. This includes: • Provision of compensatory flood storage areas • Creating and restoring wetlands • Surface water drainage provisions • Inclusion of flood relief culverts • Alterations to the watercourse channels and structures • Altering the flood plain • Reducing discharge rates from existing flow attenuation structures Flood protection measures set out in Chapter 14 of the ES (Application Document 6.1) comprise those measures necessary to protect the development during flood events and include flood bunds and flood walls. Flood resilience measures comprises of those measures specifically necessary to ensure that the development is less vulnerable to the effects of flooding. Flood resilience measures include: • Constructing roads on embankments and viaducts • Changing the road geometry • Designing with an allowance for projected climate change

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.95 NPSNN	Response considered unnecessary as reference made to further guidance in the NPPF.	No response required.
5.96 NPSNN	Applicants for projects which may be affected by, or may add to, flood risk are advised to seek sufficiently early pre-application discussions with the Environment Agency, and, where relevant, other flood risk management bodies such as lead local flood authorities, Internal Drainage Boards, sewerage undertakers, highways authorities and reservoir owners and operators. Such discussions can be used to identify the likelihood and possible extent and nature of the flood risk, to help scope the FRA, and identify the information that will be required by the Secretary of State to reach a decision on the application once it has been submitted and examined. If the Environment Agency has concerns about the proposal on flood risk grounds, the applicant is encouraged to discuss these concerns with the Environment Agency and look to agree ways in which the proposal might be amended, or additional information provided, which would satisfy the Environment Agency's concerns, preferably before the application for development consent is submitted.	A detailed Flood Risk Assessment (FRA) has been prepared in Appendix 14.6 (Application Document 6.3) of the Environmental Statement (Application Document 6.1), which has considered all sources of flood risk. The FRA has been informed by extensive consultation with the Environment Agency and relevant Lead Local Flood Authorities (LLFA), as well as the results of hydrological and hydraulic modelling of the Mardyke, the Tilbury Main and the influence of the tidal River Thames on the flow regimes of these watercourses. The FRA findings, summarised in Section 14.6 of Chapter 14: Road Drainage and the Water Environment of the ES (Application Document 6.1) and detailed in full in Appendix 14.6, have informed this environmental assessment. The Applicant has entered into a Statement of common Ground (Application Document 5.4) with the EA which shows that, the vast majority of matters are agreed between the Applicant and the EA. With specific regard to the FRA, all matters are agreed.
5.97 NPSNN	For local flood risk (surface water, groundwater and ordinary watercourse flooding), local flood risk management strategies and surface water	A strategy for managing operational surface water drainage has been prepared centred on the application of Sustainable Drainage systems (SuDS), appropriate to local conditions. The strategy is summarised in

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	management plans provide useful sources of information for consideration in Flood Risk Assessments. Surface water flood issues need to be understood and then account of these issues can be taken, for example flow routes should be clearly identified and managed.	Part 7 of Appendix 14.6: Flood Risk Assessment (FRA) (Application Document 6.1) of the Environmental Statement. The drainage principles have been discussed and agreed with relevant Lead Local Flood Authorities (LLFAs), as detailed in Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (ES) (Application Document 6.1). The assessment of baseline groundwater flooding for the Project's defined study area has referred to the LLFAs' Strategic FRAs and bespoke digital mapping products, which are included in the FRA and Appendix 14.5: Hydrogeological Risk Assessment of the Environmental Statement (Application Document 6.3) which present further details of groundwater flooding.
5.98 NPSNN	Where flood risk is a factor in determining an application for development consent, the Secretary of State should be satisfied that, where relevant: • the application is supported by an appropriate FRA; • the Sequential Test (see the National Planning Policy Framework) has been applied as part of site selection and, if required, the Exception Test (see the National Planning Policy Framework).	The most viable route for the Project lies primarily within Flood Zone 1 but unavoidably crosses three areas classed as being within Flood Zones 2, 3a and 3b. A detailed Flood Risk Assessment (FRA) has been prepared in Appendix 14.6 (Application Document 6.3) of the ES. which has considered all sources of flood risk and which has been informed by extensive consultation with the Environment Agency and relevant Lead Local Flood Authorities, as well as the results of hydrological and hydraulic modelling of the Mardyke, the Tilbury Main and the influence of the tidal River Thames on the flow regimes of these watercourses. The FRA has applied the sequential test and sets out in detail the reasons behind parts of the project unavoidably being located within Flood Zone 3. It also provides the necessary evidence to satisfy the Exception Test. Further evidence in support of the Exception Test, regarding the sustainability benefits of the Project, is summarised in the Need for the Project (Application Document 7.1).
5.99 NPSNN	When determining an application, the Secretary of State should be satisfied that flood risk will not be increased elsewhere and only consider	A detailed Flood Risk Assessment (FRA) (Application Document 6.3, Appendix 14.6 of the Environmental Statement (ES)) has been prepared that has considered all sources of flood risk. The FRA has been informed

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	development appropriate in areas at risk of flooding where (informed by a flood risk assessment, following the Sequential Test and, if required, the Exception Test), it can be demonstrated that: • within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and • development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and priority is given to the use of sustainable drainage systems.	by extensive consultation with the Environment Agency and relevant Lead Local Flood Authorities (LLFA), as well as the results of hydrological and hydraulic modelling of the Mardyke, the Tilbury Main and the influence of the tidal River Thames on the flow regimes of these watercourses. The FRA findings, summarised in Section 14.6 of Chapter 14 and detailed in full in Appendix 14.6: FRA (Application Document 6.3) of the ES, have informed this environmental assessment. As illustrated in Appendix 14.6 areas within the Order Limits are located in Flood Zone 3. As noted above, the Project has been subject to a detailed FRA, which provides the necessary evidence to satisfy the latter part of the Exception Test. Evidence in support of the first part of the Exception Test, regarding the sustainability benefits of the Project, is summarised in the Need for the Project (Application Document 7.1). The drainage design for the Project would reduce the risk of causing flooding elsewhere by using attenuation features as shown in Figure 2.4: Environmental Masterplan (Application Document 6.2) of the ES. Incorporation of a suite of flood alleviation measures as part of the Project, both during construction and operation, is intended to prevent increases in flood risk elsewhere. This includes provision of compensation storage for any permanent losses of floodplain storage volume associated with the Tilbury Main, Mardyke and Mardyke West tributary. During the Construction phase the Contractor would establish emergency response measures for construction activities in flood risk areas. The two key emergency response measures are: • readiness for the possibility of flooding • development of a flood response plan
5.100 NPSNN	For construction work which has drainage implications, approval for the project's drainage system will form part of any development consent issued by the Secretary of State. The	A strategy for managing operational surface water drainage has been prepared centred on the application of Sustainable Drainage Systems (SuDS), appropriate to local conditions.

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	Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any National Standards published by Ministers under Paragraph 5(1) of Schedule 3 to the Flood and Water Management Act 2010. In addition, the development consent order, or any associated planning obligations, will need to make provision for the adoption and maintenance of any Sustainable Drainage Systems (SuDS), including any necessary access rights to property. The Secretary of State, should be satisfied that the most appropriate body is being given the responsibility for maintaining any SuDS, taking into account the nature and security of the infrastructure on the proposed site. The responsible body could include, for example, the applicant, the landowner, the relevant local authority, or another body such as the Internal Drainage Board.	Part 7 of the Appendix 14.6: Flood Risk Assessment (FRA) (Application Document 6.3) of the Environmental Statement (Application Document 6.1) details the proposed operational drainage systems, which have been designed in accordance with relevant national standards, as referenced in Section 14.5 of Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (ES) (Application Document 6.1). The drainage principles have been discussed and agreed with relevant Lead Local Flood Authorities (LLFAs), as detailed in Chapter 14. Provision for maintenance of these drainage systems is also described in Section 14.5 and would be secured via commitments within the Register of Environmental Actions and Commitments (REAC) (Application Document 6.3, Appendix 2.2 of the ES). The proposed drainage design complies with the requirements of all appropriate standards, including the Design Manual for Roads and Bridges (DMRB) (Highways England, 2018) as well as the requirements of the Environment Agency and the local highway authorities. The Flood and Water Management Act 2010 places a duty on the Environment Agency, local authorities, developers and other bodies to manage flood risk. The Act sets out the role of Lead Local Flood Authorities (LLFAs), who are responsible for developing, maintaining and applying a strategy for local flood risk management in their areas and for maintaining a register of flood risk assets. The LLFAs for the Project are Kent County Council, Thurrock Council and the London Borough of Havering who also have lead responsibility for managing the risk of flooding from surface water, groundwater and ordinary watercourses.
5.101 NPSNN	If the Environment Agency continues to have concerns and objects to the grant of development consent on the grounds of flood risk, the Secretary of State can grant consent, but would need to be satisfied before deciding	The Flood Risk Assessment (FRA) in Appendix 14.6 (Application Document 6.3) of the Environmental Statement (Application Document 6.1) has been informed by extensive consultation with the Environment Agency which has agreed the methodology for assessing flood risk, including the required scope of hydraulic modelling of watercourses. All

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	whether or not to do so that all reasonable steps have been taken by the applicant and the Environment Agency to try and resolve the concerns.	reasonable steps have been taken to minimise the amount of development within areas at higher risk of flooding through applying the sequential test. ES Chapter 14 provides background in relation to the extensive consultation which has been undertaken with the Environment Agency. This consultation has informed the assessment methodology (including study areas, relevant timeframes, hydraulic monitoring, development design and climate change scenarios). The assessments undertaken have concluded that (having regard to the various mitigation measures proposed) no significant adverse impacts are predicted in relation to the water environment which would give the EA reason to oppose the Project. The agreed position is reported in the Statement of Common Ground (Application Document 5.4). The vast majority of matters are agreed between the Applicant and the EA. In terms of FRA, all matters are agreed.
5.102 NPSNN	The Secretary of State should expect that reasonable steps have been taken to avoid, limit and reduce the risk of flooding to the proposed infrastructure and others. However, the nature of linear infrastructure means that there will be cases where: • upgrades are made to existing infrastructure in an area at risk of flooding; • infrastructure in a flood risk area is being replaced; • infrastructure is being provided to serve a flood risk area; and • infrastructure is being provided connecting two points that are not in flood risk areas, but	The Project represents the most viable route which unavoidably crosses areas at high risk of flooding. However, the sections of the route alignment that lie in Flood Zone 3 are confined to the following areas that would benefit from existing flood defences: • Adjacent to the River Thames (north) • Near to the Mardyke (main river) A Flood Risk Assessment (FRA) has been prepared in (Application Document 6.3, Appendix 14.6 of the Environmental Statement) which considers the risk of all forms of flooding arising from the Project and demonstrates how all risks would be managed and mitigated. The steps which have been taken to avoid, limit and reduce flood risk are presented in the FRA. This includes a sustainable highway drainage design providing for runoff treatment and attenuation, compensation floodplain storage and measures to reduce groundwater ingress into excavations.

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	where the most viable route between the two passes through such an area.	The FRA findings have informed the Project design to ensure its resilience to predicted climate change effects on river flows and water levels in the Thames Estuary. Key elements of the design that deliver this resilience are the vertical alignment of the main road, the drainage design, design of watercourse crossings and additional protection measures for the tunnel portals.
5.103 NPSNN	The design of linear infrastructure and the use of embankments in particular, may mean that linear infrastructure can reduce the risk of flooding for the surrounding area. In such cases the Secretary of State should take account of any positive benefit to placing linear infrastructure in a flood risk area.	Proposed embankments within the Project design, including those between viaducts over the Mardyke floodplain area have the potential to reduce rainfall recharge received by aquifers, although the incorporation of a suite of flood alleviation measures is intended to prevent increases in flood risk elsewhere.
5.104 NPSNN	Where linear infrastructure has been proposed in a flood risk area, the Secretary of State should expect reasonable mitigation measures to have been made, to ensure that the infrastructure remains functional in the event of predicted flooding.	The Project has been designed and mitigated to ensure that during a flood event the route alignment should always remain operational. The mitigation incorporated within the Project design is set out in Section 14.5 of Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (Application Document 6.1). The proposed drainage measures for the Project as identified in the FRA (Appendix 14.6: Road Drainage and the Water Environment to the Chapter 14: of the ES (Application Document 6.1) are designed to manage surface runoff and include attenuation features to detain runoff. Part 7 of the FRA (Application Document 6.3 ES Appendix 14.6) sets out the drainage design for the Project, whilst Part 10 details how water course diversions and crossings would be designed across each of the catchments. In each case the various design elements respond to the varied constraints and pre-existing conditions within the catchment areas. Mitigation, including a sustainable highway drainage design providing for runoff treatment and attenuation, compensation floodplain storage and

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		measures to reduce groundwater ingress into excavations, has been proposed. Table 14.8 in Chapter 14: Road Drainage and the Water Environment of the ES (Application Document 6.1) summarises the likely significant effects on road drainage and the water environment. None of the residual effects are categorised as significant other than one which is categorised as a significant beneficial effect.
5.105 NPSNN	Preference should be given to locating projects in Flood Zone 1. If there is no reasonably available site in Flood Zone 1, then projects can be located in Flood Zone 2. If there is no reasonably available site in Flood Zones 1 or 2, then national networks infrastructure projects can be located in Flood Zone 3, subject to the Exception Test. If the development is not essential transport infrastructure that has to cross the area at risk, it is not appropriate in Flood Zone 3b, the functional floodplain where water has to flow and be stored in times of flood.	The Project is classed as essential transport infrastructure and project road will be in tunnel where it crosses the floodplain to the south of the River Thames, thereby avoiding above ground development in Flood Zone 3. The sequential test has been applied to ensure the Project lies within area at lower risk of flooding. Whilst parts of the Project fall within Flood Zone 3, (high probability of river and sea flooding) this is unavoidable as moving the Project road immediately to the east or west of its proposed location would not significantly change the amount of development in Flood Zone 3 (see Chapter 3: Assessment of Reasonable Alternatives of the ES (Application Document 6.1). Additionally, extending the tunnel to a point north of the floodplain would not be viable as such an arrangement would compromise future provision of a link between the A122 Lower Thames Crossing and the Port of Tilbury. In areas susceptible to flooding, the Project road would mostly be on embankments or viaducts (flood resilience measures).
5.106 NPSNN	If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for the project to be located in zones of lower probability of flooding than Flood Zone 3a, the Exception Test can be applied. The test provides a method of	In applying the exception test the FRA (ES Appendix 14.6 (Application Document 6.3)) concludes that the wider sustainability benefits of the project outweigh flood risk. The flood risk management strategy considers the suite of flood alleviation measures proposed to make the Project safe for its lifetime without increasing flood risk elsewhere.

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	managing flood risk while still allowing necessary development to occur.	
5.107 NPSNN	The Exception Test is only appropriate for use where the Sequential Test alone cannot deliver an acceptable site, taking into account the need for national networks infrastructure to remain operational during floods.	See response to paragraph 5.109 below.
5.108 NPSNN	Both elements of the test will have to be passed for development to be consented. For the Exception Test to be passed: • it must be demonstrated that the project provides wider sustainability benefits to the community that outweigh flood risk; and • a FRA must demonstrate that the project will be safe for its lifetime, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall.	See response to paragraph 5.109 below.
5.109 NPSNN	In addition, any project that is classified as 'essential infrastructure' and proposed to be located in Flood Zone 3a or b should be designed and constructed to remain operational and safe for users in times of flood; and any project in Zone 3b should result in no net loss of floodplain storage and not impede water flows.	The Project is regarded as essential infrastructure. As illustrated in Appendix 14.6: Flood Risk Assessment (FRA) (Application Document 6.3) of the Environmental Statement the following sections of the route alignment within the Order Limits are in Flood Zone 3a and 3b: • North Portal to Chadwell St Mary • Ockendon link • North Section and M25 junction The FRA provides the necessary evidence to satisfy the latter part of the Exception Test. Evidence in support of the first part of the Exception Test, regarding the sustainability benefits of the Project, is summarised in the Need for the Project (Application Document 7.1).

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		Details of the measures incorporated into the design of the Project to ensure that the route remains operational and safe for users in times of flood are provided in Section 14.5 of Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (Application Document 6.1). The FRA has considered all sources of flood risk, informed by extensive consultation with the Environment Agency and relevant Lead Local Flood Authorities, as well as the results of hydrological and hydraulic modelling of the Mardyke, the Tilbury Main and the influence of the tidal River Thames on the flow regimes of these watercourses. The highway drainage provisions have been designed to accommodate projected climate change and to be safe for the operational life of the Project.
5.110 NPSNN	To satisfactorily manage flood risk and the impact of the natural watercycle on people, property and ecosystems, good design and infrastructure may need to be secured using requirements or planning obligations. This may include the use of sustainable drainage systems but could also include vegetation to help to slow runoff, hold back peak flows and make landscapes more able to absorb the impact of severe weather events.	A strategy for managing operational surface water drainage has been prepared centred on the application of Sustainable Drainage Systems (SuDS), appropriate to local conditions. The strategy is summarised in Part 7 of Appendix 14.6: Flood Risk Assessment (FRA) (Application Document 6.3) of the Environmental Statement (ES). The drainage principles have been discussed and agreed with the Relevant Lead Local Flood Authorities (LLFA), as detailed in Chapter 14 of the ES (Application Document 6.1). Where ground conditions are favourable, SuDS employing infiltration techniques would be used for disposal of highway runoff. It is not intended that planning obligations relating to flood risk management systems would be required. The various proposed mitigation measures are included as integral design elements within the General Arrangement drawings or within the Design Principles Document (Application Document 7.5) along with the Register of Environmental Actions and Commitments (REAC) incorporated within the Construction Code of Practice Document (Application Document 6.3). Measures within the General Arrangement Drawings and the Design

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		Principles documents would be legally secured through DCO Requirement 3, whilst the measures within the REAC would be legally secured through DCO Requirement 4.
5.111 NPSNN	In this document the term Sustainable Drainage Systems (SuDS) is frequently used and taken to cover the whole range of sustainable approaches to surface water drainage management including: • source control measures including rainwater recycling and drainage; • infiltration devices to allow water to soak into the ground, that can include individual soakaways and communal facilities; • filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns; • filter drains and porous pavements to allow rainwater and run-off to infiltrate into permeable material below ground and provide storage if needed; • basins and ponds to hold excess water after rain and allow controlled discharge that avoids flooding; and • flood routes to carry and direct excess water through developments to minimise the impact of severe rainfall flooding.	Factual statement. No response required.
5.112 - 5.115 NPSNN	Site layout and surface water drainage systems should cope with events that exceed the design capacity of the system, so that excess water	As in the response to paragraph 5.97 above, the drainage systems for Project have been designed to minimise the risk of flooding elsewhere by

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	can be safely stored on or conveyed from the site without adverse impacts. The surface water drainage arrangements for any project should be such that the volumes and peak flow rates of surface water leaving the site are no greater than the rates prior to the proposed project, unless specific off-site arrangements are made and result in the same net effect. It may be necessary to provide surface water storage and infiltration to limit and reduce both the peak rate of discharge from the site and the total volume discharged from the site. There may be circumstances where it is appropriate for infiltration attenuation storage to be provided outside the project site, if necessary through the use of a planning obligation. The sequential approach should be applied to the layout and design of the project. Vulnerable uses should be located on parts of the site at lower probability and residual risk of flooding. Applicants should seek opportunities to use open space for multiple purposes such as amenity, wildlife habitat and flood storage uses. Opportunities can be taken to lower flood risk by improving flow routes, flood storage capacity and using SuDS.	incorporating current design standards and future climate change allowances. A strategy for managing operational surface water drainage has been prepared centred on the application of Sustainable Drainage Systems (SuDS), appropriate to local conditions. The strategy is summarised in Part 7 of Appendix 14.6: Flood Risk Assessment (FRA) (Application Document 6.3) of the Environmental Statement. The drainage principles have been discussed and agreed with the relevant Lead Local Flood Authorities LLFAs), as detailed in Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (Application Document 6.1). Assessment of baseline groundwater flooding for the defined study area has referenced the LLFAs' Strategic FRAs, the bespoke digital mapping products by GeoSmart (2019) and the British Geological Survey (2017). Full details are provided in Appendix 14.6 of the Environmental Statement (Application Document 6.3). Two distinct approaches to drainage design have been taken to the south and north of the River Thames: South of the River Thames, drainage systems would discharge to soakaways. New or enhanced infiltration basins would include pollution control facilities to provide water quality treatment and would also include facilities to staunch and contain any accidental spillages. North of the River Thames, drainage systems would generally be positive pipes systems outfalling into watercourses. Nevertheless, there are some locations which lend themselves to infiltration drainage, and where appropriate, swales or infiltration basins would be proposed in these locations. Other features supporting the drainage systems would comprise retention ponds and balancing ponds. Outfalls to watercourses would include attenuation basins to reduce outflows to green-field runoff rates. Attenuation basins would include

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		constructed wetlands to provide water quality treatment. All outfalls would include facilities to staunch and contain any accidental spillages, either in lined channels or swales or in oversized pipes. As well as the ground conditions and the permeability of sub-soils at any particular location, the drainage solution adopted would also be designed to suit a number of constraints including, for example, the extent of flood plains, the location of landfills and ground water levels. The sequential test is addressed within Section 3.1 of Part 6 of the FRA (Application Document 6.3 ES Appendix 14.6) and there are a number of reasons why crossing areas at risk of flooding would be unavoidable. Fundamentally there is no way to traverse the River Thames without crossing floodplain to the south. Furthermore, moving the project further east or west would not alter the amount of flood zone to be crossed. Opportunities to provide flood mitigation areas with multiple benefits have been primarily focused around biodiversity enhancements. A floodplain compensation storage area next to the Mardyke West Tributary would be planted as marshy grassland. Also, in the Mardyke catchment, wetland restoration in the form of creating ditches and open water bodies, and wet woodland planting is proposed on land next to the Mardyke Viaduct, combining habitat improvement in this area with the provision of floodplain compensation storage. Across the project, freshwater and wetland habitat would be created to compensate for reaches of open watercourse channels lost to culverting or infilling beneath the Project footprint.
Land Instability		
5.116 NPSNN	The effects of land instability may result in landslides, subsidence or ground heave. Failing to deal with this issue could cause harm to human health, local property and associated infrastructure, and the wider environment. They occur in different circumstances for different	Introductory remarks. No response required.

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	reasons and vary in their predictability and in their effect on development.	
5.117 - 5.118 NPSNN	Where necessary, land stability should be considered in respect of new development, as set out in the National Planning Policy Framework and supporting planning guidance. Specifically, proposals should be appropriate for the location, including preventing unacceptable risks from land instability. If land stability could be an issue, applicants should seek appropriate technical and environmental expert advice to assess the likely consequences of proposed developments on sites where subsidence, landslides and ground compression is known or suspected. Applicants should liaise with the Coal Authority if necessary. A preliminary assessment of ground instability should be carried out at the earliest possible stage before a detailed application for development consent is prepared. Applicants should ensure that any necessary investigations are undertaken to ascertain that their sites are and will remain stable or can be made so as part of the development. The site needs to be assessed in context of surrounding areas where subsidence, landslides and land compression could threaten the development during its anticipated life or damage neighbouring land or property. This could be in	Appendix 10.2: Stability Report (Application Document 6.3) of the Environmental Statement (ES) details the potential geotechnical hazards affecting the Order Limits and provides a review of the potential risks from land stability and geohazards. The engineering design process has been carried out and would continue in accordance with DMRB CD 622 Managing Geotechnical Risk (Highways England, 2020a). This process ensures that design parameters and mitigating techniques are established for the Project, for example, informing the requirements for ground improvement during the tunnelling works at the North and South Portal, the design of structures to cope with the ground conditions within the Order Limits and the proposed construction methodology. In line with the requirements of the NPSNN and NPPF, a preliminary assessment of land instability was completed at the early design stage and is presented in Appendix 10.2: Stability Report (Application Document 6.3). This reviews the potential for risks from land instability and geohazards within a wide study area around the Project road to help avoid hazards, where possible, or identify where technical solutions are required within the engineering design presented within the Development Consent Order (DCO) application. The conclusions of the assessment confirm that there are no significant risks identified within the study area and where risk cannot be ruled out, feasible engineering solutions are available to manage the risk. A programme of necessary investigation works was undertaken, as described in Section 10.3 of Chapter 10: Geology and Soils of the ES (Application Document 6.1). Slope stability assessments have been carried out to inform the Project design, which has confirmed the requirements for retaining features, earthwork design (for example

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	the form of a land stability or slope stability risk assessment report.	embankments and cuttings slope angles), structure foundations and ground improvements as described in Appendix 2.1 of the ES (Application Document 6.3). The validity of this work was confirmed through the data obtained via the necessary investigations completed through Phase 1 and Phase 2 and has confirmed that the study area is and would remain stable for the development. A review of published historical and geological mapping demonstrated that there are no metalliferous mines present within the study area. The Coal Authority has not been contacted as no coal bearing geology is present within the study area
The Historic Environment		
5.120 – 5.123 NPSNN	The construction and operation of national networks infrastructure has the potential to result in adverse impacts on the historic environment. The historic environment includes all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora. Those elements of the historic environment that hold value to this and future generations because of their historic, archaeological, architectural or artistic interest are called 'heritage assets'. Heritage assets may be buildings, monuments, sites, places, areas or landscapes. The sum of the heritage interests that a heritage asset holds is referred to as its	Introductory remarks. No response required.

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	significance. Significance derives not only from a heritage asset's physical presence, but also from its setting. Some heritage assets have a level of significance that justifies official designation. Categories of designated heritage assets are: World Heritage Sites; Scheduled Monuments; Listed Buildings; Protected Wreck Sites; Protected Military Remains; Registered Parks and Gardens; and Registered Battlefields; Conservation Areas	
5.124 NPSNN	Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments, should be considered subject to the policies for designated heritage assets. The absence of designation for such heritage assets does not indicate lower significance.	Chapter 6: Cultural Heritage of the Environmental Statement (Application Document 6.1) states in paragraph 6.3.57 that, for non-designated heritage assets (buildings, archaeology and historic landscapes), value has been assigned using the criteria presented in Table 6.3 which comprise a combination of Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008); GPA 3 (Historic England, 2017b) and professional judgement. Paragraph 6.3.78 of ES Chapter 6: Cultural Heritage (Application Document 6.1) confirms that none of the non-designated heritage assets of archaeological interest are considered to have the equivalent significance to a scheduled monument.
5.125 NPSNN	The Secretary of State should also consider the impacts on other non-designated heritage assets (as identified either through the development plan process by local authorities, including 'local listing', or through the nationally significant infrastructure project examination and decision making process) on the basis of	Chapter 6: Cultural Heritage of the Environmental Statement (Application Document 6.1) has identified non-designated heritage assets through the use of the Historic Environment Records covering Kent, Essex and Greater London, and provides an assessment of the significance of non-designated heritage assets.

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	clear evidence that the assets have a significance that merit consideration in that process, even though those assets are of lesser value than designated heritage assets.	
5.126 - 5.127 NPSNN	Where the development is subject to EIA the applicant should undertake an assessment of any likely significant heritage impacts of the proposed project as part of the EIA and describe these in the environmental statement. The applicant should describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the asset's importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant Historic Environment Record should have been consulted and the heritage assets assessed using appropriate expertise. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should include an appropriate desk-based assessment and, where necessary, a field evaluation.	Chapter 6: Cultural Heritage of the Environmental Statement (Application Document 6.1) identifies those heritage assets that may experience significant impacts and the nature of these as a result of the Project. The predicted temporary effects of the Project on heritage assets during the construction phase would result in changes to the setting of these assets, some of which would be significant. Permanent effects would comprise the removal of heritage assets relating to both archaeological remains and built heritage and permanent impacts through change to setting resulting from the operational Project, some of which would also be significant. The Project would have significant effects to archaeological remains in the area of the A13/A1089/A122 Lower Thames Crossing junction during construction causing permanent construction effects with the loss of the majority of the Scheduled Orsett Crop Mark Complex (SM1) which would be removed and non-designated archaeological remains associated with this monument being impacted. The assets that remain would be permanently impacted due to the change to the setting caused by large road infrastructure within the Scheduled Monument. Proposed mitigation is through archaeological excavation and recording, although, due to the scale of impact on the Scheduled Monument, the ES recognises this as having 'a permanent major magnitude impact on this high value asset after mitigation, resulting in a large adverse significance of effect.' There would also be significant impacts on built heritage with the removal of three Grade II listed buildings at Nos. 1 and Nos. 2 Grays Corner Cottages (LB89), Thatched Cottage (LB58) and Murrells Cottages (LB96). This would be mitigated through building recording although this is still

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		regarded within the ES as having 'a major magnitude permanent impact and a large adverse significance of effect.' The temporary impacts on the Conservation Areas are noise intrusion on the character of the Conservation Area and the visual changes within its setting. These would be mitigated by screening of construction compounds with close board fencing and good practice construction procedures to reduce the impact of noise, dust and lighting. There would be permanent construction impacts due to the demolition of non-designated built heritage along the northern approach into Thong Conservation Area. This route would be further impacted by new woodland along the historic approach. No mitigation has been identified that could reduce the impacts of the Project on Thong Conservation Area, which would therefore result in a major magnitude permanent impact and a moderate adverse significance of effect. The Grade II listed building Baker Street Windmill (LB57) would be temporarily impacted during construction by the introduction of noise, lighting and visible construction machinery. The impact on the listed building during the operational phase would be due to the close proximity of the A13/A1089/A122 Lower Thames Crossing junction and some of the tall structures within the new junction, which would affect the immediate setting of the asset and prevent long range views to the asset from the west and would be taller than the windmill structure when viewed from the east. No mitigation has been identified that could reduce these impacts. Information regarding the historic environment has been obtained from relevant sources including Historic Environment Records, Historic England's (2020) National Heritage List for England, local planning authorities, Historic England Archives and relevant archives/record offices. Fieldwork surveys and evaluations to further inform the environmental baseline have included but not been limited to archaeological walkovers, setting surveys, geophysical surveys and trial

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		trenching. Additional information has been collected through modelling, via a preliminary Palaeolithic and Quaternary Deposit Model. Written Schemes of Investigation for geophysical survey and archaeological trial trenching have been agreed with relevant heritage stakeholders.
5.128 NPSNN	In determining applications, the Secretary of State should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development (including by development affecting the setting of a heritage asset), taking account of the available evidence and any necessary expertise from: • relevant information provided with the application and, where applicable, relevant information submitted during examination of the application; • any designation records; • the relevant Historic Environment Record(s), and similar sources of information; • representations made by interested parties during the examination; and • expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it.	No response required.
5.129 NPSNN	In considering the impact of a proposed development on any heritage assets, the Secretary of State should take into account the particular nature of the significance of the	The assessment of effects during both the construction and operational phases of the Project on heritage assets includes archaeological remains, built heritage and historic landscapes. The Assessment has taken into account the particular nature of the significance of the heritage asset and

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	heritage asset and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal.	the value that they hold. Tables 6.10 and 6.11 of ES Chapter 6 Cultural Heritage (Application Document 6.1) provide a summary of impacts and resulting significance of effect.
5.130 NPSNN	The Secretary of State should take into account the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that their conservation can make to sustainable communities – including their economic vitality. The Secretary of State should also take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height; massing, alignment, materials, use and landscaping (for example, screen planting).	In accordance with paragraph 5.130 of the NSPNN an Assessment and design review in ES Chapter 6 Cultural Heritage (Application Document 6.1) have been undertaken to investigate opportunities for the Project to make a positive contribution to the character and local distinctiveness of the historic environment. This has also aimed to ensure that, as far as feasible, the design and landscaping are sympathetic to, and in keeping with, the character and local distinctiveness of the historic environment in order to minimise or remove adverse effects. This is presented in the Design Principles (Application Document 7.5) or as features presented on Figure 2.4: Environmental Masterplan (Application Document 6.2).
5.131 NPSNN	When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight should be. Once lost, heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting.	The assessment in Section 6.6 of the ES Chapter 6 Cultural Heritage (Application Document 6.1) identifies the level of impact on designated heritage assets. The design has been developed to avoid or reduce impacts on designated heritage assets, as described in Chapter 3: Assessment of Reasonable Alternatives of the ES, through an iterative design process. While the NPSNN divides designated heritage assets into those of 'the highest significance' and those which are therefore of lesser significance (value), guidelines associated with the latest version of DMRB, groups these assets together as 'high value' regardless of their level of

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	Given that heritage assets are irreplaceable, harm or loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of a grade II Listed Building or a grade II Registered Park or Garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance, including World Heritage Sites, Scheduled Monuments, grade I and II* Listed Buildings, Registered Battlefields, and grade I and II* Registered Parks and Gardens should be wholly exceptional.	designation. The value of Grade II listed buildings and Registered Parks and Gardens has been assessed on a case-by-case basis, with a presumption of their being high value in DMRB terms and of equivalent value with the higher listing grades unless there is a clear reason against this. This takes a precautionary approach to avoid underrepresenting significance of effects. In planning terms it is considered that the Project would lead to 'substantial harm' on the following designated heritage assets:: • Orsett Cropmark Complex (SM1) – Scheduled Ancient Monument • 1 and 2 Grays Corner Cottages (LB89) – Grade II Listed Buildings sited to the North of the River Thames near to the A1089/A13 junction. • Thatched Cottage (LB58) – A Grade II Listed Building sited to the North of the River Thames adjacent to 1 and 2 Grays Corner Cottages. • Murrells Cottages (LB96) – Grade II Listed Buildings located to the North of the River Thames on the south side of the A13 Standford Road, south of Orsett. It is recognised that substantial harm to a Scheduled Monument should be 'wholly exceptional'. The specific circumstances of this Project, taking into account the compromising effect of existing development including the existing road infrastructure links, the mitigation measures, the overriding need for the Project and lack of feasible alternative routes, represent a clear and convincing justification which is considered to be 'wholly exceptional' and, therefore, the policy test of 5.131 is satisfied. It is recognised that substantial harm to a Grade II Listed Building should be 'exceptional'. The specific circumstances of this Project, taking into account the compromising effect of the existing A13/A1089 junction layout and the constraints of the existing road infrastructure links, the mitigation measures, the overriding need for the Project and lack of feasible alternative routes, represent a clear and convincing justification which is

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		considered to be 'exceptional' and therefore the policy test of 5.131 is satisfied.
5.132 NPSNN	Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss.	The assessment in Section 6.6 of ES Chapter 6 identifies the level of impact on designated heritage assets through assessment of the magnitude of impact, determined based on the degree to which this would affect the value (significance) of heritage assets. This is expressed as either adverse or beneficial. The design has been developed to avoid or reduce impacts on designated heritage assets, as described in Chapter 3: Assessment of Reasonable Alternatives of this ES, through an iterative design process. The Need for the Project (Application Document 7.1) and Chapter 4 of the Planning Statement (Application Document 7.2) explains the need for the Project and the public benefits that the Project would provide to justify the harm to designated heritage assets. It is considered that the public benefits of the Project as set out in Chapter 4 of this Planning Statement outweigh the harm to the significance of the identified heritage assets and therefore accords with paragraph 5.132 of the NPSNN.
5.133 NPSNN	Where the proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply: • the nature of the heritage asset prevents all reasonable uses of the site; and • no viable use of the heritage asset itself can be found in the medium term through	The assessment in Section 6.6 of ES Chapter 6 identifies the level of impact on designated heritage assets through assessment of the magnitude of impact, determined based on the degree to which this would adversely affect (harm) the value (significance) of heritage assets, in order to identify any total loss of value/substantial harm. The design has been developed to avoid or reduce impacts on designated heritage assets, as described in Chapter 3: Assessment of Reasonable Alternatives of this ES, through an iterative design process. The Need for the Project (Application Document 7.1) sets out the business case for the Project and Chapter 4 of the Planning Statement (Application Document 7.2) explains the substantial public benefits that the Project would provide that justify the loss or harm to designated heritage assets.

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	appropriate marketing that will enable its conservation; and • conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and • the harm or loss is outweighed by the benefit of bringing the site back into use.	It is considered that the substantial harm to the four designated heritage assets are necessary to deliver the substantial public benefits, as set out in Chapter 4 of this Planning Statement, that outweigh that harm and it is therefore considered that the Project accords with paragraph 5.133 of the NPSNN.
5.134 NPSNN	Where the proposed development will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.	ES Chapter 6 (Application Document 6.1) provides an assessment of the impact of the Project on heritage assets within the order limits which would result in less than substantial harm to the significance of a designated heritage asset. Table 6.10 within ES Chapter 6 (Cultural Heritage) provides a summary of cultural heritage significant effects. The Project would have a significant impact on following heritage assets in the South of the River Thames section that would result in less than substantial harm during the construction phase: • Temporary impacts to five Grade II listed buildings (LB22, LB25, LB30, LB99, LB78) • Temporary impacts to Filborough Farm (1147) • Temporary impact to Thong (CA10) Conservation Area The Project would have a significant impact on following heritage assets in the North of the River Thames section that would result in less than substantial harm during the construction phase: • Temporary impact to Causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6) • Temporary impacts to Grade II listed buildings: Heath Place (LB41), Polwicks (LB48), Walnut Tree Cottage (LB49), Thatched Barn at Whitfields (LB52), Baker Street Windmill (LB57), Whitfields (LB60), Buckland (LB66)

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		• Temporary impacts to one Grade I listed building Church of St Mary Magdalene (LB69) • Temporary impacts to one Grade II listed building Franks Farmhouse (LB115) • Temporary impacts to North Ockendon (CA4), East Tilbury (CA6) and West Tilbury (CA7) Conservation Areas • Permanent impact to Grade II listed buildings: White Horse Cottage (LB22), Whitecrofts Farmhouse (LB37) • Permanent impact to six low-value built heritage assets (4153, 4154, 4155, 4156, 4157, 4159) The Project would have a significant permanent impact to Thong (CA10) Conservation Area in the South of the River Thames section that would result in less than substantial harm during the operational phase: The Project would have a significant impact on following heritage assets in the North of the River Thames section that would result in less than substantial harm during the operational phase: • Permanent impact to designated Causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6) • Permanent impact to designated Orsett cropmark complex (SM1) • Permanent impacts to North Ockendon (CA4), East Tilbury (CA6) and West Tilbury (CA7) Conservation Areas • Permanent impacts to Grade II listed buildings: Whitecrofts Farmhouse (LB37), Baker Street Windmill (LB57), Hole Farmhouse (LB153) The substantial public benefits of the Project have been summarised above and more detail provided in Chapter 11 of this Statement. The Need for the Project along with the substantial public benefits demonstrates a compelling case in favour of delivery of the Project that overrides the less than substantial harm to heritage assets. The Project

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		therefore complies with paragraph 5.134 of NPSNN. The equivalent paragraph is 5.8.15 of the NPSEN-1 (5.9.24 of the draft NPSEN-1).
5.135 NPSNN	Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. The Secretary of State should treat the loss of a building (or other element) that makes a positive contribution to the site's significance either as substantial harm or less than substantial harm, as appropriate, taking into account the relative significance of the elements affected and their contribution to the significance of the Conservation Area or World Heritage Site as a whole.	There are no World Heritage Sites affected by the Project. The Desk-Based Assessment (Appendix 6.1, Application Document 6.3) provides descriptions and assessments of value (significance) for any Conservation Areas potentially affected by the Project. In accordance with paragraph 5.25 of the NPSNN the assessment (Section 6.6 of this chapter) takes this into account in determining impact and significance of effect.
5.136 NPSNN	Where the loss of significance of any heritage asset has been justified by the applicant based on the merits of the new development and the significance of the asset in question, the Secretary of State should consider imposing a requirement that the applicant will prevent the loss occurring until the relevant development or part of development has commenced.	The field evaluation necessary to determine the character and value of heritage assets within the Order Limits, will, by its nature, have some physical impact on buried archaeological remains. However, any mitigation in the form of excavation to preserve by record, or physical impacts to built heritage, would only occur once the DCO was granted.
5.137 NPSNN	Applicants should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably.	Chapter 6: Cultural Heritage of the Environmental Statement (Application Document 6.1) and Appendix 6.1: Desk-Based Assessment of the Environmental Statement (Application Document 6.3) have provided an assessment of value for those Conservation Areas potentially affected by the Project. Views into and out of Conservation Areas have formed a key part of the consideration as to whether aspects which contribute to their significance would be impacted by the project. In the case of the Queen's Farm (CA8) Conservation Area (outside the 1km study area but included in this

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		assessment due to its located within the landscape study area) it has been established that key views into and out of the asset, identified within the Conservation Area Appraisal (Gravesham Borough Council, 2017c), do not include the area within the Order Limits. While parts of the Order Limits are distantly visible from the asset, they do not contribute to its value and construction work is unlikely to be intrusive within the views at this distance. Of the nine Conservation Areas within the defined study area, five are directly impacted by the Project to various degrees, as described below. Thong (CA10) Conservation Area: The Project would have significant impact on the Conservation Area during both the construction and operational phases. The temporary impacts would be noise intrusion and the visual changes to the setting of the Conservation Area. This would be mitigated by screening the construction compounds with close board fencing and good practice construction procedures to reduce the impact of noise, dust and lighting. Permanent construction impacts would result from the demolition of non-designated built heritage along the northern approach and by new woodland planting. No mitigation has been identified that could reduce these impacts. Shorne (CA9) Conservation Area: Large areas of the Order Limits are within view of the western edge of the Conservation Area which would be returned to agricultural use, with other areas changing from arable to areas of new contoured earthworks with woodland edge planting and species-rich grassland. West Tilbury (CA7) Conservation Area: Potential impacts on the Conservation Area mitigated through the reinstatement of agricultural land between the asset and the Project route. East Tilbury (CA6) Conservation Area: Potential temporary impact on the Conservation Area would be mitigated through screening of construction compounds with fencing, good practice measures to reduce the impact of

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		dust, noise and lighting and reinstatement of the agricultural land used for the construction compounds. North Ockendon (CA4) Conservation Area: Impacts on the Conservation Area from the Project mitigated by earthwork embankments and woodland landscape planting The iterative design process and development of mitigation has considered opportunities for enhancement and preservation of positive aspects of setting, where feasible. The assessment takes any embedded, good practice or essential mitigation into account, which is document in the in the Design Principles (Application Document 7.5) or as features presented on Figure 2.4: Environmental Masterplan of the ES (Application Document 6.2). The Design Principles (Application Document 7.5) have incorporated the following proposals based on the interpretation of historic features within the landscape and community to better reveal the significance of heritage assets: • PEO.07 heritage interpretation – to identify and document local heritage and connection to the landscape, the Project during the detailed design phase shall consider and implement an approach for signage and wayfinding for the PRoW network that includes interpretation of relevant historic features in and of the landscape and their role in the development of that place/area • LSP.07 respecting historic landscape – to protect views across historic landscape and topography, the new landscape design will take account of local landscape character, respect historic features and reference historic land use, patterns and boundaries • S9.05 heritage interpretation along Two Forts Way – interpretation boards and signage, coordinated with those for Tilbury Fields (Work No. OSR5), shall be provided along Two Forts Way, highlighting the local heritage features and directions to the new placemaking features.

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		There are no World Heritage Sites that could experience an impact from the Project and therefore they have not been included in the assessment.
5. 138 – 5.139 NPSNN	Where there is evidence of deliberate neglect of or damage to a heritage asset the Secretary of State should not take its deteriorated state into account in any decision. A documentary record of our past is not as valuable as retaining the heritage asset and therefore the ability to record evidence of the asset should not be a factor in deciding whether consent should be given.	No project response is required for paragraph 5.138 of the NPSNN. With reference to paragraph 5.139 of the NPSNN (which notes that "a documentary record of our past is not as valuable as retaining the heritage asset and therefore the ability to record evidence of the asset should not be a factor in deciding whether consent should be given." It is acknowledged that the recording of heritage assets does not fully mitigate the impact of the Project on heritage assets but provides compensation to the significant effect on heritage assets.
5.140 NPSNN	Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State should require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). The extent of the requirement should be proportionate to the importance and the impact. Applicants should be required to deposit copies of the reports with the relevant Historic Environment Record. They should also be required to deposit the archive generated in a local museum or other public depository willing to receive it.	ES Chapter 6 (Application Document 6.1) provides details on the recording of heritage assets that are to be lost as a result of the Project. Mitigation through building recording (REAC Ref. CH001; AMS-OWSI) would take place in accordance with NPSNN paragraph 5.140.
5.141 – 5.142 NPSNN	The Secretary of State may add requirements to the development consent order to ensure that this is undertaken in a timely manner in accordance with a written scheme of investigation that meets the requirements of this section and has been agreed in writing with the relevant Local Authority (or, where the	No response required for paragraph 5.141 of the NPSNN. The potential for undiscovered heritage assets with archaeological interest is identified in the Desk-Based Assessment (Appendix 6.1, Application Document 6.3) and through field evaluation and is assessed in this chapter (Section 6.6). Proposed mitigation measures are described in this chapter (Section 6.5) and Appendix 6.9: Outline Archaeological Mitigation

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	development is in English waters, with the Marine Management Organisation and English Heritage) and that the completion of the exercise is properly secured. Where there is a high probability that a development site may include as yet undiscovered heritage assets with archaeological interest, the Secretary of State should consider requirements to ensure that appropriate procedures are in place for the identification and treatment of such assets discovered during construction.	Strategy (Application Document 6.3) and secured through a requirement of the DCO.
Landscape and visual impacts		
5.143 NPSNN	The landscape and visual effects of proposed projects will vary on a case by case basis according to the type of development, its location and the landscape setting of the proposed development. In this context, references to landscape should be taken as covering seascape and townscape, where appropriate.	No response required.
5.144 - 5.146 NPSNN	Where the development is subject to EIA the applicant should undertake an assessment of any likely significant landscape and visual impacts in the EIA and describe these in the environmental assessment. A number of guides have been produced to assist in addressing landscape issues. The landscape and visual assessment should include reference to any landscape character assessment and associated studies, as a means of assessing landscape impacts	Chapter 7: Landscape and Visual of the Environmental Statement (ES) (Application Document 6.1) assesses the landscape and visual impacts of the Project. The following documents have formed the basis of this assessment: • Design Manual for Roads and Bridges (DMRB) LA 107 Landscape and Visual Effects Rev 2 (Highways England, 2020) • Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (Landscape Institute and Institute of Environmental Management and Assessment, 2013) • Relevant Natural England profiles for National Character Areas (NCAs).

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	relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on these assessments in local development documents in England. The applicant's assessment should include any significant effects during construction of the project and/or the significant effects of the completed development and its operation on landscape components and landscape character (including historic landscape characterisation). The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include any noise and light pollution effects, including on local amenity, tranquillity and nature conservation.	• Relevant local development plans policies and landscape character studies for Kent County Council, the Kent Downs AONB Unit, Gravesham Borough Council, Medway Council, Essex County Council, Thurrock Council, London Borough of Havering and Brentwood Borough Council. The assessment considers the four NCAs, namely NCA 119: North Downs, NCA 113: North Kent Plain, NCA 81: Greater Thames Estuary and NCA 111: Northern Thames Basin, which cover the Project area. Through the construction of the Project there would be a moderate adverse and significant effect on NCA 113 with no other NCAs experiencing a significant effect. The Project has also had regard to the Kent Downs AONB Management Plan 2021-2026 which sets out the special characteristics and qualities of the Kent Downs' natural beauty and formulates the policies and actions for its management and for carrying out their functions in relation to it. To enable a full assessment of the visibility and conspicuousness of the project during construction and the ES Study Area has had regard to: • the wider landscape setting within which the Project/related construction activity has the potential to influence • the extent of the Project visible from the surrounding area, including representative viewpoints • the full extent of adjacent or affected landscape receptors of special value (for example, designated areas) whose setting could be influenced by the Project • the extent of adjacent or affected visual receptors and visual amenity of the area that can be influenced by the Project ES Appendix 7.7: Representative Viewpoint and Visual Receptor Baseline Descriptions & Visual Sensitivity (Application Document 6.3) provides descriptions of the visual baseline view for each Representative

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		Viewpoint, including daytime, (winter and summer views) and night-time views (with reference to light sources). ES Chapter 12 considers noise and vibration impacts in detail. The study area for the construction and operational noise accords with guidance from Highways England along with the relevant British Standards and comprised an area up to 300m from any proposed construction activities associated with the Project (with an increased distance in the case of more rural areas). The Operational Road Noise and Vibration Study Area includes road links well beyond the order limits (including areas around the Dartford Crossing, West Thurrock and Brentwood).
5.147- 5.148 NPSNN	Any statutory undertaker commissioning or undertaking works in relation to, or so as to affect land in a National Park or Areas of Outstanding Natural Beauty, would need to comply with the respective duties in section 11A of the National Parks and Access to Countryside Act 1949 and section 85 of the Countryside and Rights of Way Act 2000. For significant road widening or the building of new roads in National Parks and the Broads applicants also need to fulfil the requirements set out in Defra's English national parks and the broads: UK government vision and circular 2010 or successor documents. These requirements should also be complied with for significant road widening or the building of new roads in Areas of Outstanding Natural Beauty.	Chapter 7: Landscape and Visual of the Environmental Statement (Application Document 6.1) along with Appendix F of the Planning Statement address the interaction between the Project and the provisions within the Access to Countryside Act 1949. ES Chapter 2 (Project Description) details that the Project passes through the West Kent Downs Character Area of the AONB for approximately 2.8km. The area of the development within the AONB is effectively from the existing Thong Lane bridge over the existing A2 to the existing Junction 1 of the M2. Within the AONB the Project would involve the realignment of the existing A2 to provide four lanes and hard shoulders / intermittent hard shoulders in each direction. Two new two-lane connector roads would be provided, north and south of the realigned A2, connecting to the existing A289 and at the eastern end of the A2. Paragraph 5.148 of the NPSNN explains that the requirements set out in this Circular apply to AONBs where significant road widening or the building of new roads is proposed. Defra's 'English National Parks and the Broads: UK Government Vision' and Circular 2010 (the Circular) (2010) sets out a number of key outcomes which support the vision for the English National Parks and the Broads.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		The Government aims towards achieving the vision can be made through authorities and key partners together focusing on the achievement of the following key outcomes: • A renewed focus on achieving the park purposes • Leading the way in adapting to and mitigating climate change • A diverse and healthy natural environment, enhanced cultural heritage and inspiring lifelong behaviour change towards sustainable living and enjoyment of the countryside • Foster and maintain vibrant, healthy and productive living and working communities • Working in partnership to maximise the benefits delivered The Circular makes clear that achieving these key outcomes should be the Government's priority for the National Parks and the Broads. Fulfilling the requirements of the Circular (or successor document) for any significant road widening or the building of new roads within the AONB is a requirement set out in paragraph 5.148 of the NPSNN. In accordance with NPSNN paragraph 5.148 the following documents demonstrate accordance with the outcomes and overall compliance with the Defra UK Government Vision and Circular 2010: • The Sustainability Statement (Application Document 7.12) recognises the importance of adapting to and mitigating climate change and sets out the key sustainability themes and outcomes for the Project. The intention is to embed sustainability into the Project through the preliminary design, direct specification and, challenging contractors to promote sustainable outcomes or including them in the REAC. • ES Chapter 8: Terrestrial Biodiversity (Application Document 6.1) assesses the potential effects of the Project on biodiversity during both the construction and operational phases and the likely impacts to important ecological features

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		• ES Chapter 7: Landscape and Visual (Application Document 6.1) presents an assessment of the landscape and visual impacts associated with the Project, including mitigation measures, residual effects and future monitoring. • In response to working in partnership with local authorities, government bodies and the Kent Downs AONB Unit full details of the consultation events are provided in the Consultation Report (Application Document 5.1).
5.149 NPSNN	Landscape effects depend on the nature of the existing landscape likely to be affected and nature of the effect likely to occur. Both of these factors need to be considered in judging the impact of a project on landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints, the aim should be to avoid or minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.	Chapter 7: Landscape and Visual of the Environmental Statement (ES) (Application Document 6.1) has divided the area covered by the Project into four National Character Areas (NCAs), namely NCA 119, NCA 113, NCA 81 and NCA 111. The four NCAs are further broken down into 22 Local Landscape Character Areas (LLCAs). These are summarised in Tables 7.11 to 7.13 of Chapter 7, together with a judgement on their landscape value. A series of design principles has been established based upon the LLCAs and these have been embedded into the design process. The design principles are secured by Requirement 3 of the draft DCO. The landscape-first hierarchy has been reflected in the Project design. For example, in the section of Project route that crosses the Mardyke, the road would be treated as a secondary element passing through the landscape. The Project has incorporated National Highways' 10 Design Principles of good road design which drives a context-based design response in integrating structures within their setting, ensuring a positive contextual intervention. The Project's mitigation measures are detailed within Figure 2.4: Environmental Masterplan (Application Document 6.2) of the ES, showing both construction phase and operational phase mitigation.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
5.150 - 5.151 NPSNN	Great weight should be given to conserving landscape and scenic beauty in nationally designated areas. National Parks, the Broads and Areas of Outstanding Natural Beauty have the highest status of protection in relation to landscape and scenic beauty. Each of these designated areas has specific statutory purposes which help ensure their continued protection and which the Secretary of State has a statutory duty to have regard to in decisions. The Secretary of State should refuse development consent in these areas except in exceptional circumstances and where it can be demonstrated that it is in the public interest. Consideration of such applications should include an assessment of: • the need for the development, including in terms of any national considerations, and the impact of consenting, or not consenting it, upon the local economy • the cost of, and scope for, developing elsewhere, outside the designated area, or meeting the need for it in some other way • any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.	The need for the Project is explained in the Need for the Project (Application Document 7.1), which establishes why the Project is in the public interest. There are therefore exceptional circumstances in this case which justify development within the AONB. The scope to develop outside the AONB designation has been considered in ES Chapter 3. The case is centred around the fact that the existing A2 is part of an established infrastructure corridor that extends east-west across the northern section of the Kent Downs AONB. The widening of the A2 is an essential element of the Project which is required to accommodate forecast increases in traffic. Alternative routes outside the AONB which were considered failed to accord with the Scheme Objectives due to a higher impact on environmentally sensitive sites and on local communities. These options also would not have relieved the existing congestion pressure at the Dartford Crossing and would not provide value for money. Other reasons for rejection relate to construction cost and time, poor connectivity to the existing highway network, and poor economic benefit, especially in locations of existing and planned development. This process established that the only viable alternative to the selected route would be the provision of a link to the A2 further east ('the Eastern Southern Link' (ESL). The ESL junction with the A2/ M2 would have had a greater physical impact on the Kent Downs AONB as there would be a greater transport infrastructure footprint within it. There would also be a greater loss of ancient woodland that forms an important part of the landscape fabric. The proposed realignment of the existing utilities within the AONB largely remains within the existing infrastructure corridor in order to minimise further encroachment into the designation. The Project has been designed to moderate any harm by combining with existing road and rail infrastructure. As the existing utilities are sited within the AONB it is not possible to divert them in a way which would avoid the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		AONB entirely. However significant improvements and design refinements have been made to reduce the land-take originally required as presented in the Supplementary Consultation (2020). The utility realignments have evolved, with numerous changes made to further reduce their impact on the AONB. Overall, construction activity would result in a perceived qualitative change in the night-time environment of the AONB, due to the increased activity and removed vegetation resulting in additional light spill and glow. Mitigation during construction through best practice include temporary screens. Operational impacts would include (amongst others): • large-scale harm to the integrity of woodland and trees • partial but noticeable loss of mature woodland, • permanent impacts on irreplaceable habitats • changes to landform, increase traffic movements Operational mitigation will include: • minimising lighting columns, their heights, and use LED luminaires with controllable directional lighting reducing light spill • multifunctional green bridges at Thong Lane/A2 and Brewers Road • restricting the width of the A2 corridor as far as practicable • micro-siting of elevated gantries • woodland planting • false cuttings • new circular walks connecting recreational areas within the Kent Downs AONB and access to the Kent Downs AONB
5.152 NPSNN	There is a strong presumption against any significant road widening or the building of new	The Scheme Objectives, agreed by National Highways and the Department for Transport (DfT), include: 'To relieve the congested

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	roads and strategic rail freight interchanges in a National Park, the Broads and Areas of Outstanding Natural Beauty, unless it can be shown there are compelling reasons for the new or enhanced capacity and with any benefits outweighing the costs very significantly. Planning of the Strategic Road Network should encourage routes that avoid National Parks, the Broads and Areas of Outstanding Natural Beauty.	Dartford Crossing and approach roads and improve their performance by providing free-flowing north-south capacity.' The Transport Assessment (Application Document 7.9) sets out the benefits of the Project in terms of improving the operation of the SRN and providing additional highway capacity. The Dartford Crossing currently experiences high levels of congestion on a regular basis. The Dartford Crossing was found to have operated above its design capacity on 337 days during 2019 (Highways England, 2019). The Need for the Project (Application Document 7.1) recognises that the lack of capacity across the River Thames and the congestion at the Dartford Crossing, 'threaten to weaken the UK's Industrial Strategy, increasingly disrupt trade flows, stifle employment growth and hamper efforts to raise national productivity levels'. The Need for the Project also explains how the Project would reduce congestion at Dartford Crossing, creating additional capacity and increased resilience across the River Thames east of London. Selection of the preferred Project route option in relation to the AONB is set out in response to paragraph 5.151(b) of the NPSNN above, including the subsequent project development after PRA leading to the proposed widening of the existing A2 corridor across the northern part of the AONB. This route would provide an essential link connecting the A2 and M2 in Kent to the M25 south of junction 29, creating an all-purpose trunk road connecting Kent, Thurrock and Essex and providing over 80% additional road capacity across the River Thames. The compelling and very significant need for the Project is explained in the Need for the Project, not only in addressing the long-standing traffic problems at the Dartford Crossing, but in delivering benefits across a wide range of needs and opportunities. In responding to these ongoing issues, the document concludes that, 'it is considered there is a clear and

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		overriding need for the Project, the adverse effects of which are very significantly outweighed by the benefits'. In summary, the range of Project benefits can be described, as follows: An additional crossing of the River Thames, east of London, would provide more reliable journeys across the Thames. The enhanced connectivity would provide increased cross river economic opportunities which would stimulate competition and boost employment in the region. It would also allow for quicker, more reliable access to key markets, resources and labour for the region's ports. The Project would provide enhanced connectivity and facilities for walkers, cyclists and horse riders, alongside improved access to community and businesses. Additionally, reduced congestion in the Dartford area would decrease air pollution. As a result of the Project, journeys on both sides of the River Thames, as well as those that cross the River, would be quicker and these journeys would be subject to less frequent delays and uncertainty than is currently experienced. Congestion at the Dartford Crossing would be significantly reduced as the Project provides substantial additional capacity and a new route option across the River Thames. Furthermore, in addition to the measures outlined above the Applicant has engaged with the AONB Unit and agreed a supplemental, compensatory enhancement fund as outlined in the Statement of Common Ground between National Highways (1) and the Kent Downs AONB Unit (2) [**REP6-018**]. The compensatory enhancement fund has been secured through a Section 106 Agreement, or equivalent legal agreement, with Kent County Council [**Document Reference 9.167 (2)**]. On that basis, and for the reasons set out above and in the Need for the Project (Application Document 7.1), it is considered that there are compelling reasons for the new or enhanced capacity and that the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		benefits outweigh the costs very significantly. The Project therefore accords with paragraph 5.152 of the NPSNN.
5.153 NPSNN	Where consent is given in these areas, the Secretary of State should be satisfied that the applicant has ensured that the project will be carried out to high environmental standards and where possible includes measures to enhance other aspects of the environment. Where necessary, the Secretary of State should consider the imposition of appropriate requirements to ensure these standards are delivered.	The Project route within the Kent Downs AONB is focused on the A2 widening works (typically occurring to the south of the existing A2), with an additional eastbound local distributor road to the northern edge. The construction of the M2/A2/Lower Thames Crossing junction includes viaducts, associated structures and green bridges. Proposed associated works include the diversion of walkers, cyclists and horse riders (WCH) tracks, earthworks, infiltration ponds, retaining walls, lighting, signage and gantries. Chapter 6 of this Statement has noted, in response to the location of the Project route within the AONB, that, over time, the establishment of new landscape features including the replacement ancient woodland planting east of Shorne Woods, replacement woodland north of the improved A2 corridor adjacent to Shorne and Brewers Wood and linear planting adjacent to HS1 would partially replace the wooded characteristics of this corridor. Compensation for ancient and SSSI woodland would be provided in the form of replacement tree planting, designed to link together areas of ancient woodland to improve connectivity and resilience. The area of ancient woodland compensatory planting would be approximately 50ha. The planting east of Shorne Woods would enhance the environment through reinforcing the woodland characteristics of this landscape, this also provides additional visual screening of existing and proposed infrastructure. The woodland mitigation here would include provision for ancient woodland planting compensation (Design Principle LSP.19) with soil translocation (Register of Environmental Actions and Commitments (REAC) entry TB028), including Veteran Tree replacement (REAC entry LV032) and relocation of lost veteran trees (REAC entry LV031). These

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		combined measures would improve biodiversity connectivity of habitats through this landscape. In addition, proposed shrub planting with intermittent trees and new hedgerow planting above the proposed green bridges at Brewers Road, Thong Lane over the A2 and Thong Lane over the new Project road would provide a degree of containment and reduced perception of the infrastructure corridor below. The green bridges would be delivered to high environmental standards focusing on improved ecological and recreational connectivity across the infrastructure corridor and within the AONB between Shorne Woods and Ashenbank Woods and Cobham parkland (Design Principles STR.01, STR.03, STR.06, STR.08, STR.11, S1.04). The Design Principles are commitments that will be secured through the draft Development Consent Order (DCO (Application Document 3.1)) and that are certified in Schedule 16. Furthermore, in addition to the measures outlined above the Applicant has engaged with the AONB Unit and agreed a supplemental, compensatory enhancement fund as outlined in the Statement of Common Ground between National Highways (1) and the Kent Downs AONB Unit (2) [**REP6-018**]. The compensatory enhancement fund has been secured through a Section 106 Agreement, or equivalent legal agreement, with Kent County Council [**Document Reference 9.167 (2)**].
5.154 - 5.155 NPSNN 5	The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting,	The landscape and visual assessment within Chapter 7: Landscape and Visual of the Environmental Statement (Application Document 6.1) has considered the reasonable worst-case scenario arising from the Project's route alignment within the Kent Downs AONB and its setting, in relation to its landscape character and features, as well as visual receptors. The assessment has concluded that the Project would result in a range of significant effects on the landscape resource and visual receptors of the AONB.

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	operational, and other relevant constraints. This should include projects in England which may have impacts on designated areas in Wales or on National Scenic Areas in Scotland. The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent.	The project design has sought to moderate impacts upon the Kent Downs AONB and as a result, the visual impacts of the Project across the wider area would be tempered by the presence of the existing transport corridor. Notwithstanding this, there would be unavoidable adverse impacts upon views of and from within the AONB as a result of the loss of defining woodland and the introduction of new elevated and permanent prominent features (gantries, green bridges, and street lighting). Partial harm to views from the Kent Downs to the surrounding landscape within the setting will result from the M2/A2/Lower Thames Crossing junction. The western setting of the AONB will be adversely affected, initially from permanent loss of arable farmland and construction of the elevated M2/A2/Lower Thames Crossing junction and latterly from the presence of new infrastructure at the junction, together with further vegetation loss. Within the setting of the AONB the mitigation will include: • large scale woodland planting • minimising impacts on Claylane Ancient Woodland and other vegetation • new earthworks providing 4m high false cuttings • multifunctional green bridges • new circular walks connecting recreational areas and access to the Kent Downs AONB, Whilst there would be a perceivable qualitative change in the night-time environment due to the change in street lighting, LED luminaires would be on reduced height columns with reduced light spill and glow. The Project design has therefore had regard to the special purposes of the AONB and has sought to minimise harmful impacts on its setting. Residual impacts would be mitigated as far as practicable.
5.156 NPSNN	Outside nationally designated areas, there are local landscapes that may be highly valued locally and protected by local designation.	Section 5.1 of Priority 5 of the Kent Environment Strategy (Kent County Council, 2016) requires the establishment of a ‘coherent, landscape-led approach to decision making…’ and a ‘…strategic approach to

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	Where a local development document in England has policies based on landscape character assessment, these should be given particular consideration. However, local landscape designations should not be used in themselves as reasons to refuse consent, as this may unduly restrict acceptable development.	assessment of character…' The landscape and visual assessment has reviewed existing published landscape character assessments and used these to inform the Local Landscape Character Areas identified and assessed in Chapter 7: Landscape and Visual (Application Document 6.1), Appendix 7.5: Local Landscape Character Baseline, and Appendix 7.9: Schedule of Landscape Effects (Application Document 6.3), with significant effects identified that might affect decision making. These effects have been moderated, wherever practicable, through the Project design, as discussed below. Design-related policies, which require development to conserve and enhance the character of an area include the following: • Sections 5.2 and 5.4 of Priority 5 of the Kent Environment Strategy (Kent County Council, 2016) • Policy BNE6 Landscape Design, Medway Local Plan (Medway Council, 2003) • Policy CS19 Development and Design Principles, Local Plan Core Strategy (Gravesham Borough Council, 2014) • Principles SD2, SD3, SD8, SD9, SD11, SD12, LLC1, BD1, HCH1 and HCH2 of the Kent Downs AONB Management Plan 2021-2026, (Kent Downs AONB Unit, 2021) • Policies CSTP22, Part 3 and CSTP23 of the Thurrock Local Development Framework (Thurrock Council, 2015) • Policies 12, 27 and 29 of the Havering Local Plan 2016-2031 (London Borough of Havering, 2021) • Policies NE02, NE03 and NE04 of the Brentwood Local Plan 2016-2033 (Brentwood Borough Council, 2022) • The development of the detailed Project design is required to have regard to the existing landscape character, as set out throughout the Design Principles (Application Document 7.5). Specifically, design principle LSP.01 discusses the retention of existing vegetation to reduce harm to the landscape, while design principles LSP.02, LSP.04,

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		LSP.09, LSP.10, LSP.13, LSP.14 and LSP.20 discuss landscape mitigation measures. Figure 2.4: Environmental Masterplan (Application Document 6.2) has been prepared to show the embedded environmental mitigation measures of the Project. It is therefore considered that the Project accords with paragraph 5.156 of the NPSNN.
5.157 NPSNN	In taking decisions, the Secretary of State should consider whether the project has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to avoid adverse effects on landscape or to minimise harm to the landscape, including by reasonable mitigation.	Minimising adverse impacts on health and the environment is one of the overarching scheme objectives. The Project Design Report (Application Document 7.4) sets out the measures to avoid adverse effects on landscape, to minimise harm to the landscape, and to mitigate residual impacts. Another key document in the development of the design proposals for landscape was the Green Infrastructure (GI) Study commissioned by the Project. Further information on the Green Infrastructure Study is provided in the Planning Statement Appendix H (Application Document 7.2). Inevitably, traffic volume and capacity has been a significant operational element which has influenced the design. For example, traffic modelling predicted that fewer vehicles would use the route between the M25 and A13. Following review, the previous design, featuring two lanes southbound between the M25 and A13 junctions, instead of the previous three land design. By making this change, the amount of land required for the Project route on this section has been reduced, lessening the environmental impact. The nature of the project also brings about a need to incorporate a number of operational elements including tunnel portals, retaining structures, noise barriers, gantries etc. Rather than such requirements acting as a constraint on achieving a sympathetic design, the Project design narrative has bound these together within a coherent strategy in which the aesthetic quality is considered in relation to the places through which the Project route passes. The engineering, landscape and architecture proposals have therefore been designed to

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		work together as one, both functionally and aesthetically and the project adopts a landscape led approach developed to be green and sympathetic (forming a positive response) to its context within the constraints. Mitigation measures have been developed to meet a variety of environmental needs and to be embedded as far as reasonably practicable into the engineering design. Engineering proposals have been designed to enhance rather than detract from the local environment where practicable.
5.158 NPSNN	The Secretary of State will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the development. Coastal areas are particularly vulnerable to visual intrusion because of the potential high visibility of development on the foreshore, on the skyline and affecting views along stretches of undeveloped coast, especially those defined as Heritage Coast.	The effects of the Project on views and visual amenity, including views from the River Thames, are detailed in Section 7.7 of Chapter 7: Landscape and Visual (Application Document 6.1) and Appendix 7.10: Schedule of Visual Effects (Application Document 6.3) of the Environmental Statement (ES). Construction and operational mitigation are described in Section 7.5 of Chapter 7 Landscape and Visual (Application Document 6.1) and in Figure 2.4: Environmental Masterplan (Application Document 6.2) of the ES showing the embedded environmental mitigation measures of the Project. The Project Design Report acknowledges that its scale means that the Project will be experienced by large numbers of people in many different ways, including people travelling along the route, those living in the towns and villages close to it, those who make recreational use of the landscape through which it passes and those who will be employed in its construction or operation. With regards to coastal landscapes, the proposal for the crossing to be in the form of a tunnel as opposed to a bridge would significantly reduce the overall impact on the coastal landscape. Whilst it is inevitable that some coastal impacts would still occur, the ES concludes that in the case of the Greater Thames Estuary National Character Area, the most significant impacts will be associated with the construction phase (including

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		temporary loss of farmland and conspicuous construction activity) and would be temporary in nature. No likely significant effects are predicted during construction or operation within the South East Marine Character Area 18: Thames and Medway Estuaries. There are no Heritage Coasts affected by the Project. The ES concludes that although there would be some very large and large adverse effects arising from the Project overall, these would be localised due to extensive mitigation proposals which would help screen views of the new road and reinstate landscape features removed to facilitate construction. For the most part, effects of the Project would be moderate or below. It is therefore concluded that the Project would result in a combined moderate adverse significance of overall landscape and visual effect on the existing landscape and visual amenity, which is considered significant in the context of the EIA Regulations. However, as set out in Chapter 8 Planning Balance of the Planning Statement, it is considered that the overriding need for the project outweighs the significant residual effects.
5.159 NPSNN	Reducing the scale of a project or making changes to its operation can help to avoid or mitigate the visual and landscape effects of a proposed project. However, reducing the scale or otherwise amending the design or changing the operation of a proposed development may result in a significant operational constraint and reduction in function. There may, be exceptional circumstances, where mitigation could have a very significant benefit and warrant a small reduction in scale or function. In these circumstances, the Secretary of State may decide that the benefits of the mitigation to	The iterative design process through the amendment of the design and development of mitigation has considered opportunities, where feasible, to reduce the impact of the Project. Visual appearance and impacts of the Project have been a key factor in both selection of the preferred route and the design of elements of the Project. The design response is that the Project would be a road that lies subservient within its context, the landscape. The existing and proposed landscape would therefore have a higher visual hierarchy than the road and the structures that support it. This would enable impacts on local communities and the environment to be minimised and opportunities for enhancement to be identified, where possible and appropriate. The Project Design Report (Application Document 7.4) describes the preliminary design and integration of the Project into its context and explains how this has been taken into account in the development of the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
	reduce the landscape effects outweigh the marginal loss of scale or function.	Project design measures. The document discusses the approach in which design of the Project has been developed. Basing the Project on good design, including landscaping design, including landscape design, is an essential focus of the Project. Design Principles (Application Document 7.5) describes the detailed design phase, setting out how the requirements and guidance within the Design Manual for Roads and Bridges (DMRB) has been met Mitigation measures incorporated into the Project design include the replacement of land and landscape features, proposed green bridge structures along the Project route and extensive woodland planting at the junctions, as well as further additional linear planting and wider hedgerow reinstatement adjacent to the Project route to aid visual screening and landscape integration. In addition, typically 4m high false cutting earthworks would provide permanent visual screening.
5.160 NPSNN	Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure, design (including choice of materials), and landscaping schemes, depending on the size and type of proposed project. Materials and designs for infrastructure should always be given careful consideration.	Chapter 7: Landscape and Visual of the Environmental Statement (ES) (Application Document 6.1) considers siting of structures and infrastructure (both temporary and permanent) as well as associated works to overhead powerlines and underground utility diversions to minimise the impacts of the Project on the landscape character and visual amenity. Figure 2.4: Environmental Masterplan (Application Document 6.2) of the ES (Application Document 6.1) shows the embedded environmental mitigation measures of the Project. With regards to design and materials in particular, The Design Principles Document (Application Document 7.5) set out the specific measures proposed to minimise landscape and visual impacts. The design is to be led by the existing landscape, incorporating, and integrating the structures and buildings, so they appear as fully and seamlessly integrated components within the landscape. The goal of the design shall be to have structures that are not overbearing or obtrusive in the landscape, thereby

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		reducing impact on the local character and environment. With regards to materials and design the various measures within the design clauses to be incorporated in the Project are extensive but include: • coherent and distinctive design for Project Enhanced Structures with a recognisable design language and consistent material palette. • consistent material palette for all structures. • Bridge pier material and form shall be distinctive and consistent across the Project and avoid large expanses of planar surfaces at the abutments and adjacent landforms. • within and close to the Kent Downs AONB, will be consistent and appropriate to the colour palette required in the Kent Downs AONB. • parapet material and form (e.g., weathering steel) will be distinctive and consistent across the Project. Parapets and acoustic barriers shall be combined where reasonably practicable. • retaining structures and bridge abutments within the Kent Downs AONB and its setting, shall be either green walls, earth banks, or clad with hard materials in accordance with the Kent Downs AONB Landscape Design Handbook (Kent Downs AONB Joint Advisory Committee, 2018), to be reflective of the local vernacular.
5.161 NPSNN	Depending on the topography of the surrounding terrain and areas of population it may be appropriate to undertake landscaping off site, although if such landscaping was proposed to be consented by the development consent order, it would have to be included within the order limits for that application. For example, filling in gaps in existing tree and hedge lines would mitigate the impact when viewed from a more distant vista.	Landscape works associated with the Project, including offsite planting within the Order Limits, is shown in Figure 2.4: Environmental Masterplan (Application Document 6.2) of the Environmental Statement (Application Document 6.1). For example, the placement of Wet (Carr) Woodland within the Orsett Fen Wetland Creation Land Parcel and Hedgerow reinforcement along an existing field boundary adjacent to Orsett Golf Course are proposed for visual screening purposes.

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Land use including Open Space, Green Infrastructure and Green Belt		
5.162 - 5.164 NPSNN	Access to high quality open spaces and the countryside and opportunities for sport and recreation can be a means of providing necessary mitigation and/or compensation requirements. Green infrastructure can also enable developments to provide positive environmental and economic benefits. The re-use of previously developed land for new development can make a major contribution to sustainable development by reducing the amount of countryside and undeveloped greenfield land that needs to be used. However, this may not be possible for some forms of infrastructure, particularly linear infrastructure such as roads and railway lines. Similarly for SRFIs, brownfield land may not be economically or commercially feasible. Green Belts, defined in a development plan, are situated around certain cities and large built-up areas. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. For further information on the purposes and protection of Green Belt see the National Planning Policy Framework.	Statement of government policy. No response required as the matters are addressed in the paragraphs below.
5.165 NPSNN	The applicant should identify existing and proposed land uses near the project, any	Chapter 13: Population and Human Health of the Environmental Assessment (Application Document 6.1) identifies existing and proposed

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	effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan. The assessment should be proportionate.	land uses within the vicinity of the Project, including private property and housing; community land and assets; development land and businesses and agricultural land holdings during the construction and operational phases. The Interrelationship with other NSIPS and major development schemes is addressed in Chapter 7 of this Planning Statement. It identifies NSIPs and major development schemes that interface the Project. It describes how other development schemes have been addressed in the DCO application for the Project as well as work being done by National Highways and the promoters of other schemes to ensure the Project is designed and delivered in a way that does not prevent the satisfactory delivery of another scheme.
5.166 NPSNN	Existing open space, sports and recreational buildings and land should not be developed unless the land is surplus to requirements or the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location. Applicants considering proposals which would involve developing such land should have regard to any local authority's assessment of need for such types of land and buildings.	Impacts of the Project on open space are addressed in Appendix D: Open Space of this Planning Statement and impacts of the Project on private recreational facilities are addressed in Appendix G: Private Recreational Facilities. Where land is provided to replace impacted special category land, Appendix D sets out how that land is no less advantageous and complies with this paragraph and 5.181. This paragraph must also be seen in the context of 5.174 of the NPSNN which allows for a loss to any relevant buildings or land to be justified by the benefits of the project (including need), taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities.
5.167 NPSNN	During any pre-application discussions with the applicant, the local planning authority should identify any concerns it has about the impacts of the application on land-use, having regard to the development plan and relevant applications, and including, where relevant, whether it agrees with any independent assessment that the land is surplus to	Pre-application consultation undertaken is detailed in the Consultation Report (Application Document 5.1), showing how consultation feedback has been incorporated into the Project. As part of the Supplementary Consultation additional information has been included within the 'Guide to Supplementary Consultation' and the relevant plans set out in the 'Map Book 1 – General Arrangements'. Due to further design refinement, the open space / private recreational facilities, and replacement land were consulted on as part of the Design Refinement Consultation. Additional

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	requirements. These are also matters that local authorities may wish to include in their Local Impact Report which can be submitted after an application for development consent has been accepted.	information was included within the 'Guide to Design Refinement Consultation', describing the special category land that the Project would impact and explaining the reasons for this.
5.168 NPSNN	Applicants should take into account the economic and other benefits of the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification). Where significant development of agricultural land is demonstrated to be necessary, applicants should seek to use areas of poorer quality land in preference to that of a higher quality. Applicants should also identify any effects, and seek to minimise impacts, on soil quality, taking into account any mitigation measures proposed. Where possible, developments should be on previously developed (brownfield) sites provided that it is not of high environmental value. For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination and how it is proposed to address this.	The Project design has been optimised to minimise the land-take required to construct and operate the Project. As part of this exercise Agricultural Land Classification surveys have been undertaken to assess the extent of Best and Most Versatile land, which are defined as Grades 1, 2 and 3a. An assessment of the construction and operation impacts on Best and Most Versatile land is presented in Section 10.6 of Chapter 10: Geology and Soils of the Environmental Statement (Application Document 6.1). Current and historic land uses have been considered as part of the evolving design and investigated through desk-based and intrusive ground investigation to establish soil quality and potential contamination levels, as presented in Section 10.4 of Chapter 10. The detailed Agricultural Land Classification survey has recorded agricultural land in Grades 1 (17.22ha), 2 (263.34ha) and 3a (68.11ha) covering approximately 54% of the land within the Order Limits south of the River Thames. The survey has recorded agricultural land in Grades 1 (7.4ha), 2 (71.02ha) and 3a (348.85ha) covering approximately 25.6% of the Order Limits north of the River Thames. It should be noted that over half of the Best and Most Versatile Agricultural Land (BMV) falls within the lowest BMV category (Grade 3a) with only a very small proportion (less than 2%) within the highest BMV category (Grade 1). Also, that this includes land that is both temporarily and permanently lost. Of the 770.94ha of BMV loss overall, 263.17ha (34.14%) is a temporary loss during construction which will be reinstated by the completion of the Project. 507.77ha (65.86%) will be permanently lost. Table 10.21 of Chapter 10 of the ES on Geology and Soils

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		(Application Document 6.1), summarises the situation in respect of temporary and permanent loss of BMV. Nonetheless, it is acknowledged (paragraph 10.6.21 of Chapter 10 of the ES Geology and Soils (Application Document 6.1)) that this loss of Best and Most Versatile Agricultural Land (BMV) represents a very large adverse effect, both during the construction phase of the Project and after completion, which is considered to be significant (paragraphs 10.6.21 and 10.6.22 of Chapter 10 (Geology and Soils of the ES (Application Document 6.1)). Whilst, to a degree, there is partial mitigation of these impacts by virtue of the reinstatement of BMV post completion of the works, the residual impact is not capable of mitigation as it is an inevitable effect of implementing the Project in this location. In this regard, the adverse effect has to be weighed in the balance against the multitude of benefits the Project will deliver which are addressed in Chapter 8: Planning Balance of this Planning Statement. Chapter 10 of the Environmental Statement (Application Document 6.1) also sets out Project's design and mitigation in relation to the prevention and control of contamination and how effects on geological receptors are to be mitigated, including measures relating to the handling and management of soils during the construction phase.
5.169 NPSNN	Applicants should safeguard any mineral resources on the proposed site as far as possible.	An evaluation of existing mineral resources and the potential for extractable minerals to be present within the Order Limits is presented within Appendix 11.2: Mineral Safeguarding Assessment Report (Application Document 6.3) of the Environmental Statement. The Report has been prepared to assess whether the Project route would sterilise the mineral resource capacity within defined Mineral Safeguarding Areas and, if so, whether removal prior to development is warranted. The assessment has confirmed that the opportunity exists for the extraction of mineral resources within the Order Limits, prior to

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		construction. There are, however, areas deemed unfeasible for the prior extraction of mineral resources, due either to adverse impacts or being economically unviable that would be safeguarded, along with safeguarded minerals where further information is needed. Ground investigation is currently ongoing to properly understand the economic viability of mineral extraction. Many of the mineral resources identified fall within areas of temporary land take or proximity to existing land use that renders future exploitation unlikely. Therefore, it is not considered that the linear nature of the permanent land take would result in sterilisation of such resources.
5.170 - 5.171 NPSNN	The general policies controlling development in the countryside apply with equal force in Green Belts but there is, in addition, a general presumption against inappropriate development within them. Such development should not be approved except in very special circumstances. Applicants should therefore determine whether their proposal, or any part of it, is within an established Green Belt and, if so, whether their proposal may be considered inappropriate development within the meaning of Green Belt policy. Metropolitan Open Land, and land designated as Local Green Space in a local or neighbourhood plan, are subject to the same policies of protection as Green Belt, and inappropriate development should not be approved except in very special circumstances. Linear infrastructure linking an area near a Green Belt with other locations will often have to pass through Green Belt land. The identification of a policy need for linear infrastructure will take account of the fact that there will be an impact on the Green Belt and	With the exception of the tunnel across the River Thames, the Project lies wholly within designated Green Belt. Both Chapter 6 and Appendix E: Green Belt of this Planning Statement consider the implications for the Green Belt and whether any potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, would be clearly outweighed by other considerations, so as to amount to very special circumstances necessary to justify the development. As a strategic highway scheme, it is acknowledged to be 'inappropriate development' within the Green Belt. The proposal thereby constitutes definitional harm. Built development of the scale and form proposed would incur harm to the openness of the Green Belt, and harm through encroachment. There would also be other, more limited non-Green Belt harms as identified (e.g. in relation to heritage assets). Balanced against this harm, the circumstances of current road congestion acting as an impediment to economic growth (as outlined in Chapter 4 (Needs and Benefits) of the Planning Statement and in Application Document 7.1: Need for the Project) are compelling and substantive. Identified harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, is shown to be clearly outweighed by these considerations. An additional consideration is that a number of elements associated with the project (environmental mitigation etc) are classed as appropriate development and (in many cases) also align with Greenbelt objectives. Very special circumstances therefore exist to justify

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	as far as possible, of the need to contribute to the achievement of the objectives for the use of land in Green Belts.	the proposal. Accordingly, such very special circumstances mean the proposal would not conflict with the NPSNN
5.172 NPSNN	Response considered unnecessary as it relates to rail development.	Not relevant to the Project.
5.173 NPSNN	Where the project conflicts with a proposal in a development plan, the Secretary of State should take account of the stage which the development plan document has reached in deciding what weight to give to the plan for the purposes of determining the planning significance of what is replaced, prevented or precluded. The closer the development plan document is to being adopted by the local plan, the greater the weight which can be attached to the impact of the proposal on the plan.	The Project does not conflict with any proposals in the development plan documents of any of the seven 'host' local authorities. An assessment of the impacts of the Project against the context provided by local development plan policy is presented in Chapter 7: Other matters of potential relevance and importance and Appendix C: Local Policy Review of this Planning Statement.
5.174 NPSNN	The Secretary of State should not grant consent for development on existing open space, sports and recreational buildings and land, including playing fields, unless an assessment has been undertaken either by the local authority or independently, which has shown the open space or the buildings and land to be surplus to requirements, or the Secretary of State determines that the benefits of the project (including need) outweigh the potential loss of such facilities, taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities.	The impact on existing open space is addressed in Chapter 6 and Appendix D Open Space of this Planning Statement. Chapter 7 of the Statement of Reasons (Application Document 4.1) states that the Project would result in the loss of existing open space land (either permanently, temporarily, or through the permanent acquisition of rights) that is either currently designated public open space or common land or allotment. The impact on private sports and recreational land and buildings is also addressed within Chapter 6 and Appendix G Recreational Facilities of this Planning Statement and Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1). Where the loss of open space and recreational facilities has been unavoidable, a greater amount of replacement land with enhanced quality is to be provided in each case. These measures will also incorporate enhanced biodiversity benefits at many sites (eg Thames Chase

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		Community forest and Folkes Land Woodland). In the case of the Southern Valley Golf Course (which would be lost as a result of the Project) the assessments undertaken have shown that viability for the facility (which has previously been promoted as a housing site) and uptake for the sport in the immediate locality is limited. A number of golf facilities also exist in the wider area. The additional benefit to be delivered through providing associated replacement land at Chalk Park would be that this site would be accessible to the public and would therefore introduce wider benefits.
5.175 NPSNN	Where networks of green infrastructure have been identified in development plans, they should normally be protected from development, and, where possible, strengthened by or integrated within it. The value of linear infrastructure and its footprint in supporting biodiversity and ecosystems should also be taken into account when assessing the impact on green infrastructure.	There are no green infrastructure networks currently identified within development plans that are likely to be affected by the Project, although the Thames Chase Community Forest is identified where relevant. Generally, existing vegetation would be retained, wherever practicable, as stated in LSP.01 of the Design Principles (Application Document 7.5). In addition, design principles LSP.02, LSP.04, LSP.06, LSP.10, LSP.13 and LSP.14 discuss landscape mitigation measures that would contribute to green infrastructure, and design principles PEO.01 to PEO.11 discuss provision and/or enhancement to walking, cycling, horse-riding (WCH) networks. The Project Design Report (Application Document 7.4) discusses in detail the design intent along the Project route, including the provision of mitigation planting, enhanced recreational routes and improved green infrastructure, for example, through the use of green bridges. Figure 2.4: Environmental Masterplan (Application Document 6.2) shows the embedded environmental mitigation measures for the Project including the provision of new green infrastructure along the Project route, as well as new green bridges.
5.176 NPSNN	The decision-maker should take into account the economic and other benefits of the best and most versatile agricultural land. The	The extent of land at each grade, as defined by the Agricultural Land Classification system, is presented in Section 10.4 of Chapter 10: Geology and Soils of the Environmental Statement (Application Document 6.1).

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	decision maker should give little weight to the loss of agricultural land in grades 3b, 4 and 5, except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy.	The presence of the Best and Most Versatile land and any other environmental benefits derived from the land, irrespective of land grade, has been taken into consideration as part of the assessment presented in Section 10.6 of Chapter 10 and in Chapter 8: Terrestrial Biodiversity of the Environmental Statement. Furthermore, BMV land and Soils would be handled and stored to allow their sustainable re-use in line with Defra Guidance. The detailed Agricultural Land Classification survey has recorded agricultural land in Grades 3b (47.06ha) and 4 (19.75ha) covering approximately 11% of the land within the Order Limits south of the River Thames. The survey has recorded agricultural land in Grades 3b (670.13ha) and 4 (26.63ha) covering approximately 41% of the land within the Order Limits north of the River Thames. It should be noted that 34% of BMV land would only be temporarily lost (and would be re-instated to the equivalent grade following construction). As referred to in the response to paragraph 5.168, the Project route has been selected through a route optioneering exercise in which the impacts on agricultural land have been weighed in the balance against the multitude of benefits the Project will deliver. The net benefits delivered by the Project are considered to significantly outweigh any adverse impacts such that the Project can be considered to comply with the relevant provisions of the NPSNN.
5.177 NPSNN	In considering the impact on maintaining coastal recreation sites and features, the Secretary of State should expect applicants to have taken advantage of opportunities to maintain and enhance access to the coast. In doing so the Secretary of State should consider the implications for development of the creation of a continuous signed and managed route	Coalhouse and Tilbury Forts lie immediately east of the Order Limits are also located along the coastal path and cycle path networks. It is acknowledged that Thurrock Council's Active Travel Strategy (Thurrock Council, 2017b) highlights the priority of addressing east-–west connections for cycling and walking. Construction impacts for Coalhouse Fort relate primarily to amenity impacts for visitors (as a result of changes in noise, traffic and landscape quality). Potential disturbance impacts from construction traffic may arise due to the use of Princess Margaret Road.

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	around the coast, as proposed in the Marine and Coastal Access Act 2009.	Tilbury Fort may similarly experience amenity impacts for users arising from changes in noise and landscape quality. Whilst the forts would not experience any impacts over the operational phase, the popularity of this coastal route has nevertheless been noted and as part of the landscaping strategy around the North Portal, the Project has been designed to include a pair of looping footpaths that climb the new landforms created from the excavated material. These footpaths are designed to be connected at both ends back to FP146 so that users of the Two Forts Way may divert from the existing route and experience newly created views over the River Thames. The extended landforms have been designed to align with the cannon mounts on the nearby forts, to focus the viewer's eye toward the heritage features. Placemaking features and interpretation material will also increase the legibility of the landscape and increase the recreational value of the route between Coalhouse Fort and Tilbury Fort.
5.178 NPSNN	When located in the Green Belt national networks infrastructure projects may comprise inappropriate development. Inappropriate development is by definition harmful to the Green Belt and there is a presumption against it except in very special circumstances. The Secretary of State will need to assess whether there are very special circumstances to justify inappropriate development. Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations. In view of the presumption against inappropriate development, the Secretary of State will attach substantial weight to the harm to the Green Belt, when considering any application for such development.	As an 'inappropriate' form of development within the Green Belt, Chapter 6 and Appendix E of this Planning Statement explain, by reference to the following matters, the 'very special circumstances' that exist in justifying the Project within the Green Belt: • The defined and overriding need for the Project: The need case for the Project, as a form of linear infrastructure. • No viable alternatives: The unavailability of viable alternatives with less adverse impacts on the Green Belt. • Policy support: Specific policy support for the Project as a major new road infrastructure and for the proposed route alignment through the Green Belt. • Temporary and limited impacts: The potential temporary visual impacts and effects on the landscape character of the Green Belt that are reversible and amount to 'very special circumstances'. Project Wide Mitigation at construction and operational stages is also relevant in the overall planning balance, and will assist in controlling construction activities, integrating the Project into the Green Belt

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		landscape where possible while minimising impact and working towards the fundamental aims of Greenbelt policy. These matters are considered to demonstrate the 'very special circumstances' in support of the Project, sufficient to overcome the presumption against 'inappropriate' development in the Green Belt, as set out in national and local planning policy. See also response to NPSNN paragraphs 5.170-5.171 above.
5.179 NPSNN	Applicants can minimise the direct effects of a project on the existing use of the proposed site, or proposed uses near the site by the application of good design principles, including the layout of the project and the protection of soils during construction.	Matters related to the design of the Project are set out in Application Documents 7.4: Project Design Report and 7.5: Design Principles.
5.180 NPSNN	Where green infrastructure is affected, applicants should aim to ensure the functionality and connectivity of the green infrastructure network is maintained and any necessary works are undertaken, where possible, to mitigate any adverse impact and, where appropriate, to improve that network and other areas of open space, including appropriate access to new coastal access routes, National Trails and other public rights of way.	A Green Infrastructure Study (Appendix H of this Statement) has been commissioned for the Project and sets out the 'bigger picture' for the delivery of large-scale Green Infrastructure and is intended to focus attention, 'on land that is to be safeguarded, managed or secured in positive ways to create a multifunctional network of green spaces and assets for which investment can deliver the greatest range of sustainable benefits.' Figure 2.4: Environmental Masterplan (Application Document 6.2) of the Environmental Statement identifies the embedded environmental mitigation measures for the Project. To maintain functionality and connectivity, any replacement land has been allocated to areas directly adjacent to the relevant site and has been designed to be larger in size. Landscaping measures will enable spaces to interlink together and function as one (for example through connecting with existing internal footpaths). Where practicable, replacement land would be equally to the wider community.

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		The Project seeks to generate a positive legacy of Green Infrastructure, through the provision of a recreational landscape for north-eastern Gravesend, Chalk and also the North Portal, currently areas of limited public open space provision. In particular, the landscaping strategy around the North Portal will provide recreational users with newly created views over the River Thames. To mitigate construction impacts, the durations over which footpaths, cycleways and bridleways will need to be closed will be minimised. All severed WCH routes would be re-linked across the Project unless better quality routes can be provided. Measures to Improve networks and open space include ensuring footbridges, green bridges and underpasses would be accessible to all users, including those using wheelchairs, and would be designed so as to ensure the safety of vulnerable users.
5.181 NPSNN	The Secretary of State should also consider whether mitigation of any adverse effects on green infrastructure or open space is adequately provided for by means of any planning obligations, for example, to provide exchange land and provide for appropriate management and maintenance agreements. Any exchange land should be at least as good in terms of size, usefulness, attractiveness, quality and accessibility. Alternatively, where Sections 131 and 132 of the Planning Act 2008 apply, any replacement land provided under those sections will need to conform to the requirements of those sections.	An assessment has been undertaken to consider the potential effects of the Project on existing open space, sports and recreational facilities. This is presented in Appendix D (Open Space and Appendix G Recreational facilities to this Planning Statement.
5.182 NPSNN	Where a proposed development has an impact on a Mineral Safeguarding Area (MSA), the	A Mineral Safeguarding Assessment Report in Appendix 11.2 (Application Document 6.3) of the Environmental Statement has been prepared to

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	Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to safeguard mineral resources.	assess whether the Project route would sterilise the mineral resource capacity within defined Mineral Safeguarding Areas and, if so, whether removal prior to development is warranted. The assessment has confirmed that the opportunity exists for the extraction of mineral resources within the Order Limits, prior to construction. There are, however, areas deemed unfeasible for the prior extraction of mineral resources, due either to adverse impacts or being economically unviable. Therefore, it is not considered that the linear nature of the permanent land take would result in sterilisation of such resources. The alignment is also unlikely to substantially constrain/prevent existing and potential future use and extraction of these materials in the wider area. The Project design has been optimised to minimise the land required to construct and operate the Project and maximise the land reinstated and returned to owners. Where land is returned, the Project would not result in the permanent sterilisation of underlying mineral resource. Where avoidance of safeguarded mineral units has not been possible the Project has identified mitigation measures to reduce the magnitude of effects on mineral resources. Mitigation measures proposed include a requirement for the contractor use the information and data available to identify what site-won excavated materials can be used as Class I-IV material or aggregate. Should it be required, supplementary data and information shall be obtained in order to assess the potential availability and suitability of excavated materials to meet the relevant material specifications (REAC:MW008) and that all excavated materials and soils proposed for reuse under a Materials Handling Management Plan would be required to meet risk-based acceptability criteria applicable to its intended use. The procedures and criteria to be used would be set out in the Materials Handling Management Plan (REAC ref. MW007) prior to commencement of that

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		part of the works (GS006) secured though the REAC/CoCP in ES Appendix 2.2 (Application Document 6.3)
5.183 NPSNN	Where a project has a sterilising effect on land use there may be scope for this to be mitigated through, for example, using the land for nature conservation or wildlife corridors or for parking and storage in employment areas.	The Project would not sterilise any existing land use.
5.184 NPSNN	Public rights of way, National Trails, and other rights of access to land (e.g. open access land) are important recreational facilities for walkers, cyclists and equestrians. Applicants are expected to take appropriate mitigation measures to address adverse effects on coastal access, National Trails, other public rights of way and open access land and, where appropriate, to consider what opportunities there may be to improve access. In considering revisions to an existing right of way consideration needs to be given to the use, character, attractiveness and convenience of the right of way. The Secretary of State should consider whether the mitigation measures put forward by an applicant are acceptable and whether requirements in respect of these measures might be attached to any grant of development consent.	Appropriate mitigation measures to address the adverse effects of the Project on existing routes and networks for walkers, cyclists and horse riders (WCH), both during construction and operation, are considered in Chapter 13: Population and Human Health of the Environmental Statement (Application Document 6.1). This has taken a Project-wide approach for opportunities to improve accessibility for WCH where the existing provision would be affected by the Project. Proposed mitigation for WCH include: • NCR177 realignment: A permanently realigned east-west route south of HS1 and improvements to existing routes, and by redesignation of existing PRoW to bridleway status. • Recreational loops: Providing links between key open areas and country parks surrounding the M2/A2/Lower Thames Crossing junction and the South Portal. • Muckingford Road: Improved links from Linford and East Tilbury to Chadwell St Mary. • Stifford Clays Road: Incremental improvements to extend cycle routes between Orsett and William Edwards Academy. • A1013 and Rectory Road: Re-provide and improve commuter cycle routes along the A1013 between Stanford-le-Hope, Orsett and Little Thurrock. Provide an equestrian standard link across the A13.

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		• Fenland access: Provide better WCH access to the fenland and Mardyke by connecting the existing Public Rights of Way (PRoW) and upgrading to new shared-use tracks. • North Road: To mitigate the severance of informal off-road routes between North and South Ockendon and improved connections between North and South Ockendon. • Addressing severance of the M25: To counter historical severance caused by the M25 and provide better recreational access to the fenland landscape from Thames Chase. Where any open access land would be directly impacted by the Project, replacement land of a larger area would be provided. Such sites would also be designed to relate closely to the existing network of recreational space and also to deliver additional benefits (such as biodiversity enhancements). The measures proposed in respect of open access land and PRoWs would be attached to any grant of development consent as specified in Schedule 4 of the Development Consent Order (DCO) (Application Document 3.1).
5.185 NPSNN	Public rights of way can be extinguished under Section 136 of the Act if the Secretary of State is satisfied that an alternative has been or will be provided or is not required.	Noted by the Applicant.
Noise and vibration		
5.186 NPSNN	Excessive noise can have wide-ranging impacts on the quality of human life and health (e.g. owing to annoyance or sleep disturbance), use and enjoyment of areas of value (such as quiet places) and areas with high landscape quality. The Government's policy is set out in	Statement of policy. No response required.

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	the Noise Policy Statement for England. It promotes good health and good quality of life through effective noise management. Similar considerations apply to vibration, which can also cause damage to buildings. In this section, in line with current legislation, references below to "noise" apply equally to assessment of impacts of vibration.	
5.187 NPSNN	Noise resulting from a proposed development can also have adverse impacts on wildlife and biodiversity. Noise effects of the proposed development on ecological receptors should be assessed in accordance with the Biodiversity and Geological Conservation section of this NPS.	The potential effects to terrestrial biodiversity as a result of the operation of the Project on ecological receptors identified in Chapter 8: Terrestrial Biodiversity of the Environmental Statement (Application Document 6.1) and includes noise disturbance to various species, including birds, foraging and commuting bats, badger and water vole. Mitigation through noise screening and bunding, as outlined in ES Chapter 12: Noise and Vibration (Application Document 6.1), has been designed to minimise the noise effects on the wider landscape from the Project. In relation to marine biodiversity, underwater noise generated during marine construction is considered within Chapter 9: Marine Biodiversity of the Environmental Statement (Application Document 6.1) as having the potential to impact fish, marine mammals and macroinvertebrates. In terms of the marine works associated with the Project, the following construction activities are considered to be sources of underwater noise and with the following effects: • As a result of the higher levels of background noise and the low levels of noise generated from the tunnel boring machine operations, the level of impact from underwater noise on mammals and subtidal and intertidal communities is considered to have a neutral effect overall. • As a result of the higher levels of background noise, the restrictions of using vibro-piling and limiting piling operations to low water, the level of

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		impact from underwater noise on marine fish, is considered to be neutral to slight on the fish community overall. Construction phase essential mitigation of relevance to marine biodiversity includes undertaking works to construct the water management pipeline and outfall, including any necessary piling, at low tide to reduce the transmission of noise. For the operational phase of the Project, no underwater noise modelling has been undertaken as there is not considered to be a pathway to effect from Heavy Goods Vehicles using the tunnel. The noise effects of the Project on ecological receptors have been assessed in accordance with the Biodiversity and Geological Conservation section paragraph 5.36.
5.188 NPSNN	Factors that will determine the likely noise impact include: • construction noise and the inherent operational noise from the proposed development and its characteristics; • the proximity of the proposed development to noise sensitive premises (including residential properties, schools and hospitals) and noise sensitive areas (including certain parks and open spaces); • the proximity of the proposed development to quiet places and other areas that are particularly valued for their tranquillity, acoustic environment or landscape quality such as National Parks, the Broads or Areas of Outstanding Natural Beauty; and	Noted. No response required.

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	• the proximity of the proposed development to designated sites where noise may have an adverse impact on the special features of interest, protected species or other wildlife.	
5.189 NPSNN	Where a development is subject to EIA and significant noise impacts are likely to arise from the proposed development, the applicant should include the following in the noise assessment, which should form part of the environment statement: • a description of the noise sources including likely usage in terms of number of movements, fleet mix and diurnal pattern. For any associated fixed structures, such as ventilation fans for tunnels, information about the noise sources including the identification of any distinctive tonal, impulsive or low frequency characteristics of the noise. • identification of noise sensitive premises and noise sensitive areas that may be affected. • the characteristics of the existing noise environment. • a prediction on how the noise environment will change with the proposed development: – In the shorter term such as during the construction period; – in the longer term during the operating life of the infrastructure;	Noise and vibration impacts linked to the Project over both the construction and operational phase have been fully assessed and considered and are set out within Chapter 12: Noise and Vibration of the Environmental Statement (ES) (Application Document 6.1). Operational road traffic noise assessment has been based upon the most likely mix of light vehicles and Heavy Goods Vehicles over an 18-hour period during the daytime and 8 hours during the night. A description of likely noise sources has been provided in the construction noise assessment and ventilation noise assessment. The assessment of any tonal or impulsive characteristics from the tunnel ventilation has been taken into account in accordance with British Standard (BS) 4142 Methods for rating and assessing industrial and commercial sound (British Standards Institution, 2019). Noise sensitive premises and areas have been identified within the defined study area and are presented in Figure 12.3 Operational Road Noise and Vibration Study Area of the ES (Application Document 6.1). Short-term and long-term noise surveys during the daytime and night-time have been undertaken at 68 locations within proximity of the Project to understand the existing noise environment. The short-term noise impacts have been taken from the opening year of the Project. Long-term operational noise impacts have been considered by assessing future road traffic noise 15 years after opening, during the night-time (23:00 to 07:00) and daytime (07:00 to 23:00) for construction and operational road traffic and tunnel ventilation noise.

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	– at particular times of the day, evening and night as appropriate. • an assessment of the effect of predicted changes in the noise environment on any noise sensitive premises and noise sensitive areas. • measures to be employed in mitigating the effects of noise. Applicants should consider using best available techniques to reduce noise impacts. • the nature and extent of the noise assessment should be proportionate to the likely noise impact.	Section 12.6 of Chapter 12 of the ES describes how the noise environment would change during both construction and operation. The results of this assessment are summarised below. For permanent operational road traffic noise impacts, an assessment has been undertaken for the short and long-term (15 years after opening) which has predicted that for both periods: • Significant adverse impacts along the Project route, though in accordance with UK policy on noise these have been mitigated to a minimum and remain below a SOAEL (Significant Observed Adverse Effect Level - being the level above which significant adverse effects on health and quality of life could occur). • Beneficial impacts along the by-passed network, though not significant. • Operational tunnel ventilation noise not considered to have a significant impact, subject to inherent mitigation and control. In relation to construction noise impacts, a total of 171 noise sensitive receptors (NSRs) have been selected as representative of the entire Project route length. The assessment has shown that, other than seven receptors along a section of the Project route north of the River Thames to the A13, the remaining 164 receptors would not experience significant effects (based upon the standards of the Design Manual for Roads and Bridged ((DMRB) LA 111). The seven remaining receptors would not constitute a breach of an appropriately defined SOAEL and as such would be acceptable with regard to UK noise policy. Relative to these receptors no further mitigation is considered be necessary. Recommended mitigation measures for the Project includes both construction and operational noise. For construction noise, a set of best practice working methods would be applied for the control of construction noise and vibration, asset out within the Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3). This includes implementing Best Available Techniques where necessary through the

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		construction phase of the Project, along with a set of generic best practice working methods referred to as Best Practicable Means. For the operational phase, embedded mitigation includes locating the road alignment as far away as feasible from identified NSRs and within cuttings or false cuttings/bunds to reduce road traffic noise levels. In addition, all new and altered roads associated with the Project would be surfaced with a thin surfacing system, in order to reduce road traffic noise. For the tunnel control rooms and ventilation system, the quietest plant available would be selected and implemented into the final detailed design. With respect to the marine environment, modelling has been used to predict underwater noise and vibration levels associated with construction and operation of the Project. The resulting underwater noise and vibration levels have been compared against known injury and disturbance thresholds for marine receptors to assess the potential for significant effects. The results are presented in Chapter 9: Marine Biodiversity of the Environmental Statement (Application Document 6.1). The Habitats Regulations Assessment Stage 1 Screening Report and the Statement to Inform an Appropriate Assessment (SIAA) for the Project (Application Document 6.5) concludes that, having regard to embedded mitigation, there was sufficient evidence to demonstrate beyond reasonable scientific doubt that there would be no adverse noise and vibration effects on integrity of habitats sites from the Project alone and in combination with other plans or projects.
5.190 NPSNN	The potential noise impact elsewhere that is directly associated with the development, such as changes in road and rail traffic movements elsewhere on the national networks, should be considered as appropriate.	Chapter 12: Noise and Vibration of the Environmental Statement (ES) (Application Document 6.1) considers the construction and operational effects on road noise and vibration impacts linked to the Project, in line with UK legislation and guidance. The likely significant environmental effects within the wider study area based on unaltered traffic links outside the bypassed area are presented in Section 12.6 of Chapter 12 of the ES (Application Document 6.1).

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		Within this reporting section no identified NSRs are predicted to experience an adverse or beneficial change in road traffic noise level of a large enough magnitude that would change the acoustic character. No significant effects are therefore identified.
5.191 NPSNN	Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards and other guidance. The prediction of road traffic noise should be based on the method described in Calculation of Road Traffic Noise. …. For the prediction, assessment and management of construction noise, reference should be made to any relevant British Standards and other guidance which also give examples of mitigation strategies.	ES Chapter 12: Noise and Vibration (Application Document 6.1) has fully considered the noise (and vibration) impacts of the Project in accordance with relevant UK legislation and guidance, as follows: • Operational noise predictions have been undertaken in accordance with the Calculation of Road Traffic Noise and assessed in accordance with the Design Manual for Roads and Bridges (DMRB) LA 111. • Construction impacts have been predicted and assessed in accordance with BS 5228 parts 1 and 2 (British Standards Institution, 2014 and 2014b). • Tunnel ventilation noise has been assessed in accordance with BS 4142 (British Standards Institution, 2019).
5.192 NPSNN	The applicant should consult Natural England with regard to assessment of noise on designated nature conservation sites, protected landscapes, protected species or other wildlife. The results of any noise surveys and predictions may inform the ecological assessment. The seasonality of potentially affected species in nearby sites may also need to be taken into account.	Chapter 8: Terrestrial Biodiversity and Chapter 9: Marine Biodiversity of the Environmental Statement (ES) (Application Document 6.1) outline the consultation undertaken with Natural England since 2013, including agreement on the location of noise surveys. The desk-based and field survey requirements which have informed the Habitats Regulations Assessment were subject to consultation with Natural England via the EIA scoping process and reported within the Scoping Report for the Project (Application Document 6.3). The impacts and effects considered in the HRA assessment were developed in a series of methodology briefs and technical notes which were shared with Natural England for comment prior to the production of the Statement to Inform an Appropriate Assessment (SIAA) for the Project (Application Document 6.5). Data from Natural England publications relating to Thames Estuary and Marshes SPA, and the Thames Estuary and Marshes Ramsar site

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		including SPA and SAC Natura 2000 forms has also informed assessments within the ES. The assessment of construction and operational phase effects include a consideration of potential effects arising from noise disturbance. Both resident and regularly occurring species have been included in the assessment.
5.193 NPSNN	Developments must be undertaken in accordance with statutory requirements for noise. Due regard must have been given to the relevant sections of the Noise Policy Statement for England, National Planning Policy Framework and the Government's associated planning guidance on noise.	Chapter 12: Noise and Vibration of the Environmental Statement (ES) (Application Document 6.1) refers to the relevant environmental noise and vibration legislative framework that has formed the basis of the noise assessment, including both European and national statutory requirements, as follows: Operational noise predictions have been undertaken in accordance with the Calculation of Road Traffic Noise and assessed in accordance with Design Manual for Roads and Bridges (DMRB) LA 111. Construction noise impacts have been predicted and assessed in accordance with BS 5228 Parts 1 and 2 (British Standards Institution, 2014 and 2014b). Tunnel ventilation noise has been assessed in accordance with BS 4142 (British Standards Institution, 2019). Chapter 12 of the ES has also identified where the national policy requirements in respect of noise have been addressed as part of the Project assessment. 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 works (REAC reference NV004)
5.194 NPSNN	The project should demonstrate good design through optimisation of Scheme layout to minimise noise emissions and, where possible,	The design of the Project has followed an iterative approach calling on the expertise of the design team to ensure the good acoustic design of the Project.

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	the use of landscaping, bunds or noise barriers to reduce noise transmission. The project should also consider the need for the mitigation of impacts elsewhere on the road and rail networks that have been identified as arising from the development, according to Government policy.	The Design Principles, Environmental Masterplan, LEMP, CoCP and REAC, all form part of the Project control plan. The control plan is the framework for mitigating, monitoring and controlling the effects of the Project. It is made up of a series of 'control documents' which present the mitigation measures identified in the application that must be implemented during design, construction and operation to reduce the adverse effects of the Project. Further explanation of the control plan and the documents which it comprises is provided in the Introduction to the Application (Application Document 1.3). Primarily, the design approach followed, advocates the use of more natural landscaping and earthworks as the main method of noise mitigation, combined with thin surfacing systems (with acoustic mitigation properties). This has been augmented by the inclusion of acoustic fencing where earthworks measures were not possible, but mitigation was considered to be beneficial. The embedded earthworks mitigation for operation is set out in Table 12.28 of ES Chapter 12: Noise and Vibration and presented in Figure 2.4: Environmental Masterplan (Application Document 6.2). Relevant Design Principles (Application Document 7.5) for embedded earthworks are STR.10, S11.05, S11.09 and S14.06. The acoustic barriers are secured through REAC commitment NV011 (Section 7 of the CoCP (Application Document 6.3, Appendix 2.2)) and relevant Design Principles (Application Document 7.5) are STR.04, STR.06, STR.07, STR.09, STR.10, S10.05, S11.05, and LSP.09. This is presented and discussed in more detail within Section 12.5 of ES Chapter 12: Noise and Vibration, Project design and mitigation.
5.195 NPSNN	The Secretary of State should not grant development consent unless satisfied that the proposals will meet, the following aims, within	The alignment of the Project has been located as far away as is feasible from identified Noise Sensitive Receptors. Additionally, through the design process, the alignment of the Project has been located within cuttings

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	the context of Government policy on sustainable development: • avoid significant adverse impacts on health and quality of life from noise as a result of the new development; • mitigate and minimise other adverse impacts on health and quality of life from noise from the new development; and • contribute to improvements to health and quality of life through the effective management and control of noise, where possible.	and/or false cuttings/bunds where practicable to reduce significant environmental effects including noise. To mitigate and minimise adverse impacts, where earthworks measures were not practicable and additional mitigation was deemed necessary, acoustic fencing has been identified. Further detail of mitigation measures to avoid or reduce adverse impacts on health and quality of life from noise as a result of the Project are set out in ES Chapter 12: Noise and Vibration (Application Document 6.1). Notwithstanding, significant effects above a SOAEL have not been completely avoided and there remain receptors where significant effects above a SOAEL are predicted during operation. However, due to the scale and nature of the Project, avoiding all significant adverse effects was not possible when considering the principles of sustainable development, and for the reasons as detailed in paragraphs 12.6.116 (Henhurst Road), 12.6.126 (Brook Farm Cottages), 12.6.184, (A228 Corridor) and 12.6.193 (A229 Corridor) of ES Chapter 12: Noise and Vibration (Application Document 6.1). Therefore, based upon the reasons quoted therein and within the context of Government policy on sustainable development, having regard to the need for the Project as described in Application Document 7.1, the Project is considered to be in accordance with the requirements of NPSNN paragraph 5.195. Across the Affected Road Network the Project will deliver significant improvements to quality of life (including noise impacts). Measures incorporated within the development design to ensure effective management and control of noise are numerous. In particular, operational static plant noise associated with the tunnel ventilation buildings at the North and South Portals, will be mitigated through design and equipment specification suitable to comply with the noise levels specified in REAC (Reference NV014). A number of Noise Important areas will benefit from mitigation measures embedded in the project design and would, as a result experience a

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		decrease in noise level. NIAs which lie away from the Order Limits are shown to, at worst, result in minor adverse changes in road traffic noise would be mitigated through the mechanisms already in place by National Highways including relevant noise action plans.
5.196 - 5.197 NPSNN	In determining an application, the Secretary of State should consider whether requirements are needed which specify that the mitigation measures put forward by the applicant are put in place to ensure that the noise levels from the project do not exceed those described in the assessment or any other estimates on which the decision was based. The Examining Authority and the Secretary of State should consider whether mitigation measures are needed both for operational and construction noise over and above any which may form part of the project application. The Secretary of State may wish to impose requirements to ensure delivery of all mitigation measures.	Through the implementation of the various mitigation measures referred to above. Those specific to the construction are contained within the CoCP (ES Appendix 2.2 Application Document 6.3) which, in turn is secured through Requirement 4 of Part 1 of Schedule 2 of the draft DCO (Application Document 3.1), whilst those specific to the operational phase are included within the Design Principles (Application Document 7.5), secured through requirement 3 of the dDCO (Application Document 3.1), or as features presented on Figure 2.4: Environmental Masterplan (EMP) (Application Document 6.2) secured through dDCO Requirement 4
5.198 NPSNN	Mitigation measures for the project should be proportionate and reasonable and may include one or more of the following: • engineering: containment of noise generated; • materials: use of materials that reduce noise, (for example low noise road surfacing); • lay-out: adequate distance between source and noise-sensitive receptors; incorporating good design to minimise noise transmission	Chapter 12: Noise and Vibration of the Environmental Statement (ES) (Application Document 6.1) provides details of the proposed mitigation measures for the Project, which are summarised below: Embedded mitigation – construction phase: • Locating construction compounds and route alignment as geographically removed as possible from sensitive receptors • Careful consideration on the layout of compounds • Minimising construction traffic • Reduction in tunnel boring machine activity

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	through screening by natural or purpose built barriers; • administration: specifying acceptable noise limits or times of use (e.g., in the case of railway station PA systems).	Embedded mitigation – operational phase • Aligning the Project route away from Noise Sensitive Receptors (NSRs) • Locating the Project route within a cutting or false cutting/bund • Significant use of earth bunding, cuttings and false cuttings • Selecting the quietest plant from the tunnel control rooms and ventilation system Good practice commitments include working methods for the control of construction noise and vibration, as set out within the Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3). This includes implementing Best Available Techniques where necessary through the construction phase of the Project, along with a set of generic best practice working methods referred to as Best Practicable Means. Operational phase good practice includes surfacing all new and altered roads associated with the Project with a thin surfacing system. For operational noise emissions generated from the tunnel control rooms and ventilation system, good practice mitigation would involve selecting appropriate locations for noisy plant during the detailed design. For the operational phase, specific noise mitigation measures incorporated as part of the Project design include a range of reflective and acoustically treated barriers and absorptive parapets on viaducts and bridges.
5.199 NPSNN	For most national network projects, the relevant Noise Insulation Regulations will apply. These place a duty on and provide powers to the relevant authority to offer noise mitigation through improved sound insulation to dwellings, with associated ventilation to deal with both construction and operational noise. An indication of the likely eligibility for such	Chapter 12: Noise and Vibration of the Environmental Statement (Application Document 6.1) presents the results of noise impacts during construction and operation of the Project. This includes the results of a Noise Insulation Regulations assessment, which indicates that none of the 3,240 residential dwellings identified within 300m of the Project would qualify for noise insulation under the Noise Insulation Regulations.

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	compensation should be included in the assessment. In extreme cases, the applicant may consider it appropriate to provide noise mitigation through the compulsory acquisition of affected properties in order to gain consent for what might otherwise be unacceptable development. Where mitigation is proposed to be dealt with through compulsory acquisition, such properties would have to be included within the development consent order land in relation to which compulsory acquisition powers are being sought.	
5.200 NPSNN	Applicants should consider opportunities to address the noise issues associated with the Important Areas as identified through the noise action planning process.	The Project has considered Noise Important Areas within the assessment of operational effects, which are presented in Chapter 12: Noise and Vibration of the Environmental Statement (Application Document 6.1). The Project would result in likely significant beneficial effects for five Noise Important Areas (located in areas between the Dartford Crossing and M25 junction 28; along the B1421, B188 and the A282; and near the A2) during operation and no likely significant adverse effects on any existing Noise Important Areas within the Project study area.
Impacts on Transport Networks		
5.201- 5.202 NPSNN	Introductory statements	No response required.
5.203 NPSNN	Applicants should have regard to the policies set out in local plans, for example, policies on demand management being undertaken at the local level.	This Statement has included a full assessment of the consistency of the Project with the local planning policy framework of the seven ‘host’ local authorities, as set out in Appendix C to this Planning Statement.
5.204 NPSNN	Applicants should consult the relevant highway authority, and local planning authority, as	Volume 5 of the Consultation Report (Application Document 5.1) provides details of the informal engagement that has taken place, including that

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	appropriate, on the assessment of transport impacts.	with the relevant highway and local authorities and how the comments received have been taken into account in developing the Project.
5.205 NPSNN	Applicants should consider reasonable opportunities to support other transport modes in developing infrastructure. As part of this, consistent with paragraph 3.19-3.22 above, the applicant should provide evidence that as part of the project they have used reasonable endeavours to address any existing severance issues that act as a barrier to non-motorised users.	Chapter 13: Population and Human Health of the Environmental Statement (ES) (Application Document 6.1) sets out how the Project has considered walkers, cyclists and horse riders (WCH). This includes an assessment of existing routes and networks to understand user needs which has been used to inform the Project design. Additionally, Chapter 5 of the Need for the Project (Application Document 7.1) considers the benefits of the Project to WCH, stating that consideration has been given in the Project's development to repairing existing Public Rights of Way (PRoW) severance, in addition to maintaining, and where practicable, improving existing access. The design proposals have incorporated the provision of new routes for WCH (as referred to in the response to paragraph 5.184 above) and which have been designed to improve access to the existing network, increase access for all users (including those with limited mobility) while considering and mitigating potential impacts from misuse and anti-social behaviour through good design. See also the response to paragraph 3.17 NPSNN above
5.206 NPSNN	For road and rail developments, if a development is subject to EIA and is likely to have significant environmental impacts arising from impacts on transport networks, the applicant's environmental statement should describe those impacts and mitigating commitments. In all other cases the applicant's assessment should include a proportionate assessment of the transport impacts on other networks as part of the application.	An EIA was carried out for the Project, which identifies and assesses the impacts arising from the Project and the proposed mitigation measures, the results of which are reported in the ES (Application Document 6.1). The Transport Assessment (Application Document 7.9) sets out an assessment of the transport impacts on the strategic and local road network as a result of the Project. This has in turn been informed by the Lower Thames Area Model (LTAM) which assesses: • existing traffic and transport conditions; • future baseline • forecast traffic and transport conditions with the Project • forecast impacts of the completed Project on all modes of transport; and

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		• forecast impacts of construction and construction traffic Mitigating and/or monitoring commitments include: • Wider Network Impacts Management and Monitoring Plan (Application Document 7.12) • The Framework Construction Travel Plan (Application Document 7.13) • Outline Traffic Management Plan for Construction (Application Document 7.14) • Outline Materials Handling Plan (ES Appendix 2.2 Application Document 6.3) • Traffic and Transport (ES Appendix 4.4 Application Document 6.3) • In addition, the Project recognises the potential for long linear projects measures are required to address the impact of severance for local communities especially for walking cycling and horse riding (WCH) routes, these impacts have been assessed in Chapter 13 Population and Human Health (Application Document 6.1) and in response the Project proposed 46km of new or improved WCH routes resulting in an improvement to the network. In response to the Examining Authority's consideration of wider network impacts at the Examination hearings, specifically ExA Actions Points 3, 5 and 6 arising from Issue Specific Hearing 10, the Applicant's Wider Network Impacts Position Paper [**REP6-092**] supplements the WNIMMP in respect of potential wider network impacts at four specified locations raised by Interested Parties. These locations being the Blue Bell Hill corridor, the A13 corridor, the A2/M2 corridor and the Asda roundabout.
5.207 - 5.210 NPSNN	Response considered unnecessary as it relates to Strategic rail freight interchange development.	No response required.
5.211 NPSNN	The Examining Authority and the Secretary of State should give due consideration to impacts on local transport networks and policies set out in local plans, for example, policies on demand	Impacts on local transport networks are identified and addressed in the TA (Application Document 7.9). Local plan policy is addressed in Chapter 7 Other matters of potential relevance and importance and Appendix C of this Planning Statement.

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	management being undertaken at the local level.	
5.212 NPSNN	Schemes should be developed and options considered in the light of relevant local policies and local plans, taking into account local models where appropriate, however the scheme must be decided in accordance with the NPS except to the extent that one or more of sub-sections 104(4) to 104(8) of the Planning Act 2008 applies	Relevant local plan policies are addressed in Chapter 7 and Appendix C of this Planning Statement.
5.215 NPSNN	Mitigation measures for Schemes should be proportionate and reasonable, focussed on promoting sustainable development.	Mitigation is addressed in a number of places. Mitigation is embedded into the design of the Project and the route selection process as set out in Application Document 7.4: Project Design Report and Application Document 7.5: Design Principles. Measures to be taken to mitigate transport impacts during the construction and operation of the Project are set out in the TA (Application Document 7.9) with specific measures contained in the Appendices to the TA including the: • Wider Network Impacts Management and Monitoring Plan (Application Document 7.12) • Framework Construction Travel Plan (Application Document 7.13) • Outline Traffic Management Plan for Construction (Application Document 7.14 Mitigation measures identified in these documents are committed through the CoCP (ES Appendix 2.2 Application Document 6.3) which is secured (along with specific mitigation measures) through requirements 1, 4, 10, 11 and 14 contained in Part 1 to Schedule to the dDCO (Application Document 3.1)

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5.216 NPSNN	Where development would worsen accessibility such impacts should be mitigated so far as reasonably possible. There is a very strong expectation that impacts on accessibility for non-motorised users should be mitigated.	Section 4 of the HEqIA (Application Document 7.10) sets out the proposed mitigation to minimise potential impact on accessibility. The measures identified include: Construction: • Project designed to reduce land take • Construction compounds located away from PRoW's, National Trails and cycle routes where feasible • Measures to reduce visual and noise impacts • Maintaining access to existing areas of open space during construction Operation: • Provision of replacement, where appropriate, equal or greater in size than the land required for the Project • Creation of green bridges to maintain and enhance connectivity for WCH • Re-linking of all PRoWs, bridleways and cycle routes crossed by the Project • Creation of new routes for WCH • Ensuring footbridges, green bridges and underpasses would be accessible to all users • Measures to reduce visual and noise impacts Also see responses in paragraphs 3.17, 3.19 and 3.20. The Project has carried out an assessment of the potential wider impacts on local roads, the evidence is presented in the Traffic Assessment (Application Document 7.9) and the application is accompanied by a monitoring plan that would identify unintended impacts and provide evidence to inform decision making in relation to future interventions

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		(Wider Network Impacts Management and Monitoring Plan (Application Document 7.12)). In response to the Examining Authority's consideration of wider network impacts at the Examination hearings, specifically ExA Actions Points 3, 5 and 6 arising from Issue Specific Hearing 10, the Applicant's Wider Network Impacts Position Paper [**REP6-092**] supplements the WNIMMP in respect of potential wider network impacts at four specified locations raised by Interested Parties. These locations being the Blue Bell Hill corridor, the A13 corridor, the A2/M2 corridor and the Asda roundabout.'
5.217 NPSNN	Mitigation measures may relate to the design, lay-out or operation of the scheme.	See response to paragraph 5.215 above.
5.218 NPSNN	Response considered unnecessary as this relates to strategic rail freight interchange development.	No response required.
Water quality and resources		
5.219 NPSNN	Infrastructure development can have adverse effects on the water environment, including groundwater, inland surface water, transitional waters and coastal waters. During the construction and operation, it can lead to increased demand for water, involve discharges to water and cause adverse ecological effects resulting from physical modifications to the water environment. There may also be an increased risk of spills and leaks of pollutants to the water environment. These effects could lead to adverse impacts on health or on protected species and habitats (see Section paragraphs 5.20 to 5.38 on	The existing water environment (water quality, water resources and physical characteristics) is described in Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (Application Document 6.1), as well as the effects of the Project which are described and assessed. Appendix 14.7: Water Framework Directive Assessment (Application Document 6.3) of the Environmental Statement assesses the impacts of the Project on the Water Framework Directive (WFD) quality elements of relevant surface water and groundwater bodies and any dependent designated sites. All surface and groundwater features within 500m of the Order Limits and groundwater features within 3km of the Order Limits have been included in the baseline assessments undertaken. The Operational Surface Water Drainage Pollution Risk Assessment (Appendix 14.3 of the ES, Application Document 6.3) concludes that the

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	biodiversity and geological conservation), and could, in particular, result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Framework Directive.	proposed treatment measures will adequately safeguard water quality. With regards to increased risk of spills and leaks of pollutants the ES concludes that the design of highway drainage systems will safeguard receiving watercourses from these impacts. The objectives of the WFD would therefore be met. The Hydrogeological Risk Assessment (Appendix 14.5 of the ES, Application Document 6.3) concludes that, having regard to embedded mitigation, there would be no significant adverse impacts upon groundwater quality, groundwater resources or the physical characteristics of the groundwater bodies. With regards to ecological receptors, changes to water quality from land drainage, and dewatering during construction will not lead to significant adverse impacts on protected sites or marine water quality. Additionally, no significant changes to freshwater flows to intertidal and subtidal habitats are predicted. Changes to water quality from construction and decommissioning of the temporary Project water management pipeline and outfall have also been assessed but would not give rise to significant adverse effects on protected sites.
5.220 NPSNN	Where applicable, an application for a development consent order has to contain a plan with accompanying information identifying water bodies in a River Basin Management Plan.	The surface water bodies located within the Project's Zone of Influence are presented in Drawing 2, Annex 3 of Appendix 14.7 (Application Document 6.3) of the Environmental Statement.
5.221 NPSNN	Applicants should make early contact with the relevant regulators, including the Environment Agency, for abstraction licensing and with water supply companies likely to supply the water. Where a development is subject to EIA and the development is likely to have significant adverse effects on the water	As referred to in the response to paragraph 4.54 above, early engagement has been undertaken with the Environment Agency on a range of issues, including the water features survey, hydrogeological monitoring, WFD assessment, surface water discharge, dewatering and contaminated land along with consent requirements. Consultation has also been undertaken with the water supply companies along with Natural England and the North Kent Marshes Internal Drainage Board.

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	environment, the applicant should ascertain the existing status of, and carry out an assessment of the impacts of the proposed project on water quality, water resources and physical characteristics as part of the environmental statement.	Accompanied site visits with the Environment Agency have also been undertaken as part of the engagement process. An assessment of the impacts of the Project on these resources is reported in Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) of the Environmental Statement, Section 14.3 sets out the scope of assessment and methodology while Section 14.4 describes the water environment baseline.
5.222 NPSNN	Response considered unnecessary as this relates to improvements to existing infrastructure.	No response required.
5.223 NPSNN	Any environmental statement should describe: • the existing quality of waters affected by the proposed project; • existing water resources affected by the proposed project and the impacts of the proposed project on water resources; • existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project, and any impact of physical modifications to these characteristics; • any impacts of the proposed project on water bodies or protected areas under the Water Framework Directive and source protection zones (SPZs) around potable groundwater abstractions; and • any cumulative effects.	The existing water environment (water quality, water resources and physical characteristics) is described in Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (ES) (Application Document 6.1). Surface water quality has been defined using available data records supplied by the Environment Agency, in addition to field sampling. Further baseline water quality for the River Thames is provided in Chapter 9: Marine Biodiversity of the ES. Ground water quality (including aquifer vulnerability) has also been assessed and it is evident that agricultural application of fertilisers, landfill leachate migration and other land use pressures have impacted upon existing water quality to varying degrees within the study area. The existing physical characteristics of the water environment assessed within the ES include surface water levels and flows, groundwater levels and flows and surface water interactions. In accordance with best practice to assess compliance of the Project with the WFD, Groundwater Dependent Terrestrial Ecosystems have been assessed. Appendix 14.4: Hydromorphology Assessment of the ES (Application Document 6.3) presents an assessment of the impacts of physical modifications to watercourses.

NPSNN paragraph number	Requirement of the NPSNN	Compliance with the NPSNN
		Appendix 14.7: Water Framework Directive (WFD) Assessment of the ES (Application Document 6.3) assesses the impacts of the Project on the WFD quality elements of relevant surface water and groundwater bodies and any dependent designated sites. The assessment has concluded that the Project would not prevent the future attainment of the WFD objectives for each of the respective water bodies, nor pose barriers to implementing future measures described in the River Basin Management Plans to achieve these objectives. Appendix 14.5: Hydrogeological Risk Assessment (Application Document 6.3) of the ES sets out the impacts from the Project on potable groundwater abstractions. Over both the construction and operational stage, no change is predicted at SPZ1. Only negligible impacts are predicted at Linford public supply well (north of the Thames) and Southern Water Services Ltd supply wells (south of the River Thames). The potential for cumulative effects is addressed in Chapter 16: Cumulative Effects Assessment of the ES (Application Document 6.1). The overall conclusion of Chapter 14 Road Drainage and Water Environment of the ES (Application Document 6.1), taking into account the project design and mitigation set out in Section 14.5, is that there would be no likely significant adverse effects on water environment receptors.
5.224 NPSNN	Activities that discharge to the water environment are subject to pollution control. The considerations set out in paragraphs 4.48-4.56 on the interface between planning and pollution control therefore apply. These considerations will also apply in an analogous way to the abstraction licensing regime regulating activities that take water from the water environment, and to the control regimes	The Consents and Agreements Position Statement (Application Document 3.3) identifies the separate water related consents that would be pursued separate and subsequent to the Development Consent Order (DCO) (Application Document 3.1). The Development Consent Order (DCO) itself would include other consents through its provision for disapplication of the need for external consents and protective provisions for the benefit of regulators. This would include water abstraction and working on and near ordinary watercourses.

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	relating to works to, and structures in, on, or under a controlled water.	
5.225 NPSNN	The Secretary of State will generally need to give impacts on the water environment more weight where a project would have adverse effects on the achievement of the environmental objectives established under the Water Framework Directive.	A Water Framework Directive (WFD) Assessment has been undertaken and is presented in Appendix 14.7 of the Environmental Statement (Application Document 6.3). The objective of the WFD Assessment is to establish the nature and anticipated magnitude of the impacts of the Project on the WFD quality elements of relevant surface water and groundwater bodies and any dependent designated sites. The assessment has concluded that there would be no deterioration of biological quality, hydromorphology, physicochemical or specific pollutant supporting elements at the surface water body scale, at which WFD compliance is judged. In addition, the Project would not prevent the future attainment of the WFD objectives for each of the respective water bodies, nor pose barriers to implementing future measures described in the River Basin Management Plans to achieve these objectives.
5.226 NPSNN	The Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the Water Framework Directive (including Article 4.7) and its daughter directives, including those on priority substances and groundwater. The specific objectives for particular river basins are set out in River Basin Management Plans. In terms of Water Framework Directive compliance, the overall aim of projects should be no deterioration of ecological status in watercourses, ensuring that Article 4.7 of the Water Framework Directive Regulations does not need to be applied.	A Water Framework Directive (WFD) Assessment has been prepared and is provided in Appendix 14.7 (Application Document 6.3) of the Environmental Statement (ES) (Application Document 6.1). Appropriate design and mitigation measures have been incorporated into the Project to facilitate WFD compliance. These are described in Section 14.5 of Chapter 14: Road Drainage and the Water Environment of the ES. The Thames River Basin Management Plan (RBMP) (Department for Environment, Food and Rural Affairs and Environment Agency, 2018), along with the 2021 consultation draft update to the Thames RBMP have been considered through the ES. The WFD Assessment has concluded that the project would not pose barriers to implementing future measures described in the River Basin Management Plan.

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5.227 NPSNN	The Examining Authority and the Secretary of State should consider proposals put forward by the applicant to mitigate adverse effects on the water environment and whether appropriate requirements should be attached to any development consent and/or planning obligations. If the Environment Agency continues to have concerns and objects to the grant of development consent on the grounds of impacts on water quality/resources, the Secretary of State can grant consent, but will need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the Environment Agency to try to resolve the concerns, and that the Environment Agency is satisfied with the outcome.	The Environment Agency (EA) has been consulted extensively and has agreed methodologies for assessing flood risk, including the required scope of hydraulic modelling of watercourses. A summary of the consultation undertaken with regulatory authorities is presented in Table 14.4 of Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (Application Document 6.1). A range of measures have been put forward to mitigate adverse effects on the water environment and these include: • Selection of a route that avoids an SPZ1 of public water supply wells, safeguarding potable groundwater quality • To the south of the River Thames, where there is a lack of suitable watercourses to receive operational drainage from the Project, new wide, shallow infiltration basins have been sited to avoid SPZ1s • To ensure no detriment, during the management of vegetation and landform at nitrogen deposition compensation sites the Project would reduce release of diffuse (rural) sources of pollution such as nitrate (fertilisers) and pesticides (including herbicides), to prevent groundwater pollution • Securing and carrying out construction works in accordance with relevant environmental permits and consents • Worksite drainage systems would incorporate pollution control systems These measures have been informed by the ongoing consultation with the EA and will be referred to within the Statement of Common Ground (Application Document 5.4). The vast majority of matters relating to water quality and the WFD are agreed with discussion still continuing on a handful of matters relating to some culverting proposals and the impacts of that activity on WFD habitat and one compensation / enhancement proposal.

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5.228 NPSNN	The impact on local water resources can be minimised through planning and design for the efficient use of water, including water recycling.	See response to paragraph 5.225 NPSNN
5.229 NPSNN	The Secretary of State should consider whether the mitigation measures put forward by the applicant which are needed for operation and construction (and which are over and above any which may form part of the project application) are acceptable. A construction management plan may help codify mitigation.	Embedded mitigation is included within the Design Principles (Application Document 7.5) and Code of Construction Practice (CoCP) (ES Appendix 2.2 Application Document 6.3). Good practice and essential mitigation are included in Appendix 2.2: Register of Environmental Actions and Commitments (REAC) (Application Document 6.3) of the Environmental Statement.
5.230 NPSNN	The project should adhere to any National Standards for sustainable drainage systems (SuDs). The National SuDs Standards will introduce a hierarchical approach to drainage design that promotes the most sustainable approach but recognises feasibility, and use of conventional drainage systems as part of a sustainable solution for any given site given its constraints.	A response is provided to paragraph 5.100 above. A strategy for managing operational surface water drainage has been prepared centred on the application of Sustainable Drainage Systems (SuDS), appropriate to local conditions. The strategy is summarised in Part 7 of Appendix 14.6: Flood Risk Assessment (Application Document 6.3) in the Environmental Statement. The drainage principles have been discussed and agreed with relevant Lead Local Flood Authorities (LLFAs), as detailed in Chapter 14 of the Environmental Statement (Application Document 6.1). SuDS have been incorporated into the preliminary design where practicable. The underlying chalk formation south of the Thames and also at the A13 junction is suitable for SuDS features incorporating infiltration techniques; the use of such features would therefore be prioritised in these areas. Using infiltration techniques at the Ockendon Link, the North Portal to Chadwell St Mary and the northernmost section of the project would not be feasible due to: • Unfavourable ground conditions. • Presence of landfills along the route. • Potential for high groundwater

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		Notwithstanding this, SuDS components would include Infiltration basins and swales (although these would be used as retention features rather than conveyance features). In the northernmost section of the Project pollution control measures would be used to protect downstream water bodies and flow control measures to attenuate discharge of runoff to watercourses. The various SuDS components are secured by Design Principles (Application Document 7.5) and is also presented on Figure 2.4: Environmental Masterplan (Application Document 6.2).

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5.231 NPSNN	The risk of impacts on the water environment can be reduced through careful design to facilitate adherence to good pollution control practice. For example, designated areas for storage and unloading, with appropriate drainage facilities, should be marked clearly.	Section 14.5 in Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (ES) (Application Document 6.1) describes the construction and operational mitigation proposed for the Project. This includes measures delivered through the design of the Project and also via construction methods, as well as good practice embodied in the Design Manual for Roads and Bridges (DMRB) LA 113 on Road Drainage and the Water Environment (Highways England, 2020). During construction worksite drainage systems would incorporate pollution control systems, which would be inspected and maintained to ensure they continue to operate to their design standard, safeguarding surface and groundwater quality. As detailed in the CoCP (Application Document 6.3, Appendix 2.2), equipment such as spill kits and absorption mats would be made available. Specific areas would be designated for the storage of chemicals, waste oils and fuel and refuelling activities and would be bunded to provide capacity for at least 110% of the largest container and placed on hardstanding to prevent downward migration of contaminants. Drainage measures would be designed to isolate any spillages. With regards to the operational design, where there is a lack of suitable watercourses to receive operational drainage from the Project, new wide, shallow infiltration basins will be sited to avoid SPZ1s. Drainage design would include treatment systems for highway runoff.

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