A303 Amesbury to Berwick Down

Statement of Matters issued 30 November 2021:
Applicant's response to the matters on which the Secretary of State invites further representations (Paragraph 2)

Response to Bullet Point Three – Carbon

Document reference: Redetermination-1.3

Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

January 2022.

Table of contents

Table of Tables

1 Introduction

1.1.1 The Secretary of State for Transport (SoS) has requested further representations from National Highways (the Applicant) on certain matters for the purposes of his re-determination of the application. The SoS's request is set out in their Statement of Matters published on the Planning Inspectorate's website on 30 November 2021.

1.1.2 This document is the Applicant's response to Bullet Point Three of Paragraph 2 in the Statement of Matters, which requests:

"Any update to:

- *the assessment of the impact of the scheme on the carbon budgets to take account of the Sixth Carbon Budget; and*
- *the direct, indirect and cumulative likely significant effects of the development with other existing and/or approved projects on climate, including greenhouse gas emissions and climate change adaptation, in light of the requirements set out in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations') and in light of paragraphs 5.17 and 5.18 of the National Policy Statement for National Networks;"*

1.1.3 This document also addresses Bullet Point Two of Paragraph 2 in the Statement of Matters, with specific reference to climate:

- *"Any change in whether the Development would be consistent with the requirements and provisions of relevant local or national policies, given the time since the examination closed;".*

1.1.4 Chapter 14 Climate of the Environmental Statement (ES) [APP-052] (the 2018 ES) presents an assessment of the impact of the Scheme on climate change in line with the requirements presented in the National Policy Statement for National Network (NPSNN). In addressing the points in the SoS's Statement of Matters noted above, this document considers changes relating to climate matters since the close of Examination for the Scheme. These changes include certain key developments, such as:

1.1.5 The Design Manual for Roads and Bridges (DMRB) LA 114 Climate[1], providing guidance on assessing the climate impact of road schemes was published after the Scheme climate assessment was undertaken and reported in the 2018 ES. However, both the 2018 ES and this Statement of Matters response follow the approach set out in DMRB LA 114 to calculating estimated greenhouse gas emissions from the Scheme and assessing these against the relevant carbon budget periods in which they arise. An assessment against the 6th Carbon Budget, adopted since the

[1] Design Manual for Roads and Bridges LA114 Climate

2018 ES was produced, has been undertaken and the results reported in this Statement of Matters response.

1.1.6 DMRB LA 114 also requires an assessment of the vulnerability of the Scheme to climate change impacts using the latest set of United Kingdom Climate Projections (UKCP) produced by the Met Office. At the time the 2018 ES was produced the latest climate projection data set available was that published in 2009, UKCP09. An updated climate projection data set was published in 2018 (UKCP18) after the 2018 ES was produced. During the examination period an assessment using UKCP18 was undertaken to determine if this would change the outcome of the climate vulnerability assessment. The results of this assessment, presented in the Applicant's response to the Second Written Question CC.2.4 [REP6-025], determine that the use of UKCP18 would not change the outcome of the assessment. No updated climate projections have been published since the UKCP18 publication and therefore this remains the relevant data to assess against.

1.1.7 In conclusion, the introduction of DMRB LA 114 has not changed the outcome of either the greenhouse gas or climate change vulnerability assessments reported in the 2018 ES or any subsequent supplementary assessment materials produced prior to the publication of the SoS's Statement of Matters.

1.1.8 Since the production of the Scheme climate assessment reported in the 2018 ES there have been a number of amendments to national carbon reduction targets and to national policy relating to climate change, including:

- An amendment to the Climate Change Act 2008 in June 2019 legislating for the UK to achieve net zero by 2050[2];
- Legislating the adoption of the target for emissions reductions for the Sixth Carbon Budget period 2033 to 2037, in June 2021, which is the first carbon budget in line with the net zero target[3];
- The publication of Decarbonising Transport, the Government's strategy to decarbonise transportation by 2050[4]; and
- The publication of the Net Zero Strategy by Government[5].

1.1.9 As is set out below, the updated assessment which has been carried out in light of the changes to policy and publication of DMRB LA 114 which have occurred since the publication of the 2018 ES, do not change the

[2] The Climate Change Act 2008 (2050 Target Amendment) Order 2019 https://www.legislation.gov.uk/ukdsi/2019/9780111187654
[3] The Carbon Budget Order 2021 (SI 2021/750) 23 June 2021 www.legislation.gov.uk/ukdsi/2021/9780348222616
[4] Decarbonising Transport – A Better, greener Britain, DfT 2021 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf
[5] Net Zero Strategy: Build Back Greener, HM government, 2021 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

conclusions reached in the 2018 ES. The updated assessment still concludes that the increase in carbon emissions resulting from the proposed Scheme are not significant and would not have a material impact on the ability of Government to meet its carbon reduction targets. As a result, in accordance with NPSNN paragraph 5.18, any increase in carbon emissions associated with the Scheme compared to the position if the Scheme were not constructed is not a reason to refuse development consent.

1.1.10 There have been no changes to policy since the publication of the 2018 ES that would require further assessment of the vulnerability of the Scheme to the impacts of climate change. Furthermore, the requirements of DMRB LA 114 to assess the Scheme using the latest climate projection data were met during the examination process. UKCP18 remains the latest set of climate projection data and remains the relevant data to assess against.

2 Amendments to Climate Policy/Guidance

2.1 Policy

2.1.1 Since the 2018 ES, the following policy, relevant to undertaking climate assessment, has been published.

Climate Change Act 2008 (2050 Target Amendment) Order 2019

2.1.2 The Climate Change Act 2008 set out a legally binding target for the UK Government to reduce national GHG emissions from 1990 levels by at least 80% by 2050. This target was supported by a series of five-year carbon budgets.

2.1.3 The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (June 2019)[6], revised the previous 80% GHG target, to commit the UK to net zero emissions by 2050. Achieving net zero will require future GHG emissions to be aligned (avoided or offset) with any future new or revised carbon budgets that may be set out by Government to achieve the target of net zero carbon by 2050.

Sixth Carbon Budget Order, June 2021

2.1.4 The Climate Change Act 2008 requires Government to set five-yearly carbon budgets, twelve years in advance, from 2008 to 2050. In June 2021, Government legislated for the Sixth Carbon Budget covering the period 2033 to 2037. This is the first carbon budget to align with the statutory net zero target. A summary of the UK Government carbon budgets is provided in **Table 2-1**[7].

Table 2-1. UK Carbon Budgets

Carbon Budget	Carbon Budget Level	Reduction Below 1990 Levels
3rd Carbon Budget (2018 to 2022)	2,544 $MtCO_2e$	37% by 2023
4th Carbon Budget (2023 to 2027)	1,950 $MtCO_2e$	51% by 2025
5th Carbon Budget (2028 to 2032)	1,725 $MtCO_2e$	57% by 2030
6th Carbon Budget (2033 to 2037)	965 $MtCO_2e$	78% by 2035
Note: $MtCO_2e$ = Million Tonne CO_2 equivalent. Values are reported in metric tonnes		

[6] The Climate Change Act 2008 (2050 Target Amendment) Order 2019 www.legislation.gov.uk/ukdsi/2019/9780111187654

[7] Department for Business, Energy and Industrial Strategy Carbon Budgets https://www.gov.uk/guidance/carbon-budgets

National Policy Statement for National Networks (NPSNN) 2014

2.1.5 The Climate Assessment presented in Chapter 14 of the 2018 ES [APP-052] was undertaken in line with the requirements of the NPSNN. The NPSNN requires that:

"*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 provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets*" (paragraph 5.17).

"*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 scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets*" (paragraph 5.18).

2.1.6 The Decarbonising Transport plan (page 103) (please see next section for more details) recognises that the NPSNN was formulated in the context of previous climate change targets:

"*The current National Policy Statement (NPS) on National Networks, the Government's statement of strategic planning policy for major road and rail schemes, was written in 2014 – before the Government's legal commitment to net zero, the 10 Point Plan for a Green Industrial Revolution, the new Sixth Carbon Budget and most directly the new, more ambitious policies outlined in this document. While the NPS continues to remain in force, it is right that we review it in the light of these developments, and update forecasts on which it is based to reflect more recent, post-pandemic conditions, once they are known*."

2.1.7 Therefore, there will be a review of the NPSNN in the future, as was announced by the Department of Transport on 22 July 2021. While the review is undertaken, the NPSNN remains relevant Government policy and has effect for the purposes of the Planning Act 2008. The NPSNN will, therefore, continue to provide a proper basis on which the planning inspectorate can examine, and the SoS can make decisions on, applications for development consent.

Decarbonising Transport: A Better, Greener Britain, July 2021

2.1.8 Decarbonising Transport[8] was published in July 2021 in response to the UK's statutory net zero emissions target. Decarbonising Transport sets out the Government's commitments, and the actions needed, to decarbonise the transport system in the UK by 2050. Emissions from the construction of transport infrastructure are not considered in Decarbonising Transport. The key focus of Decarbonising Transport is on the impacts from road user emissions.

2.1.9 While Decarbonising Transport identifies that public transport, cycling and walking should be the first choice for those who can take it, it also states that:

"*Our ambitious roads programme will continue to reflect that in any imaginable circumstances the clear majority of longer journeys, passenger and freight, will be made by road; and that rural, remote areas will always depend more heavily on roads*" (page 5).

2.1.10 The focus of the Decarbonising Transport is more 'blended' transport, utilising less carbon intense transportation when possible. It states that decarbonising motor transport is a vital part of this plan and sets out a number of targets and commitments to allow this to happen including:

- Sales of all new petrol and diesel cars and vans to be phased out by 2030;
- Sales of new diesel HGVs (less than 26 tonnes) to be phased out by 2035;
- Sales of new diesel HGVs (over 26 tonnes) to be phased out by 2040; and
- An initiative to support the uptake of 4,000 zero emissions buses.

2.1.11 The overarching target presented in Decarbonising Transport is to decarbonise road transport to net zero by 2050.

2.1.12 Decarbonising Transport also recognises the importance of road improvements as part of the solution to reduce congestion. Page 103 of Decarbonising Transport states:

"*Continued high investment in our roads is therefore, and will remain, as necessary as ever to ensure the functioning of the nation and to reduce the congestion which is a major source of carbon*."

"In the coming years, our ambitious and accelerating plans to decarbonise all road traffic, described elsewhere in this document (Decarbonising Transport), will transform roads' impact on greenhouse gas emissions."

[8] Decarbonising Transport: a better, greener Britain, July 2021 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf

National Highways Net Zero Highways Plan, July 2021

2.1.13 To support the Decarbonising Transport plan, National Highways published its own 2030/2040/2050 net zero highways plan[9] in July 2021. This plan includes commitments that National Highways' corporate emissions become net zero by 2030, its maintenance and construction activities will become net zero by 2040 and road use emissions on the strategic road network will become net zero by 2050[10].

2.1.14 National Highways recognises that it has a key role in the development and maintenance of a strategic road network that will facilitate the journey to net zero emissions. As part of this the National Highways Net Zero Plan sets out commitments to develop a blueprint for EV charging and energy storage by 2023 and to report to Government on global HGV technology trials and set out proposals for trials in the UK in 2022.

Net Zero Strategy: Build Back Greener

2.1.15 On 19 October 2021 the Government published its Net Zero Strategy[11]. In his forward the Prime Minister explained:

> "*For years, going green was inextricably bound up with a sense that we have to sacrifice the things we love. But this strategy shows how we can build back greener, without so much as a hair shirt in sight. In 2050, we will still be driving cars, flying planes, and heating our homes, but our cars will be electric gliding silently around our cities, our planes will be zero emission allowing us to fly guilt-free, and our homes will be heated by cheap reliable power drawn from the winds of the North Sea. And everywhere you look, in every part of our United Kingdom, there will be jobs. Good jobs, green jobs, well-paid jobs, levelling up our country while squashing down our carbon emissions*."

2.1.16 The Strategy explains (page 17):

> "*This document sets out clear policies and proposals for keeping us on track for our coming carbon budgets, our ambitious Nationally Determined Contribution (NDC), and then sets out our vision for a decarbonised economy in 2050.*
>
> *Whilst there are a range of ways in which net zero could be achieved in the UK, we set out a delivery pathway showing indicative emissions reductions across sectors to meet our targets up to the Sixth Carbon Budget (2033-2037). This is based on our current understanding of each sector's potential, and a whole system view of where abatement is most effective.*

[9] National Highways Net Zero Highways. Our 2030 / 2040 / 2050 plan, July 2021 [REDACTED]

[10] Taking into account offsetting greenhouse gas reduction measures as explained in the Net Zero Plan (page 7).

[11] Net Zero Strategy: Build Back Better, HM Government, 2021 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

But we must be adaptable over time, as innovation will increase our understanding of the challenges, bring forward new technologies and drive down the costs of existing ones."

2.1.17 The Strategy recognises therefore, that there are a range of policy measures available to achieve net zero emissions, and that the policy approach adopted by Government to ensure attainment of carbon reduction targets may vary over time. Nevertheless, the Strategy sets out a delivery pathway showing "indicative emissions reductions across sectors" from present day to 2037. This includes indicative emissions reductions within the transport sector as whole.

2.1.18 The Strategy explains:

"*We must deliver a step change in the breadth and scale of our ambitions and, to this end, in July 2021 we published our world leading Transport Decarbonisation Plan. This covered all areas of transport and set out an ambitious but deliverable pathway to reaching net zero and delivering against carbon budgets along the way. The pathway we have set out is not about stopping people from doing things. Rather, it's about doing the same things differently*" (page 153 paragraph 2).

2.1.19 The focus with the Strategy is upon replacing the use of combustion engines within vehicles. The Strategy explains:

"*This strategy sets out how we will make historic transitions to remove carbon from our power, retire the internal combustion engine from our vehicles and start to phase out gas boilers from our homes*" (page 8).

2.1.20 The Strategy continues:

"*Much of the change needed to deliver net zero for the transport sector is already underway and makes sense even without the global imperative of climate change. Decarbonisation will deliver fundamentally better transport, for everyone, every day. It will make it faster and more efficient, as well as cleaner, and provide benefits including increased reliability and better connectivity*" (page 155 paragraph 7).

2.1.21 Thus, the emphasis is to deliver a road transport system which is decarbonised and which is faster, more efficient with increased reliability and better connectivity.

2.1.22 In relation to the local response to transport decarbonisation, the Strategy explains that:

"*We are driving decarbonisation and transport improvements at a local level by making quantifiable carbon reductions a fundamental part of local transport planning and funding. Local Transport Plans (LTPs) – statutory requirements that set out holistic place-based strategies for improving transport networks and proposed projects for investment – will need to set*

out how local areas will deliver ambitious carbon reductions in line with carbon budgets and net zero" (page 163 paragraph 47).

2.1.23 No further detail is provided on when and how local areas will be set carbon reductions by Government.

Wiltshire Planning Policy

2.1.24 Wiltshire Council acknowledged a climate emergency in February 2019, a declaration that was acknowledged during the Examination of the Scheme (see, for example, REP4-036 paragraph 2.1.1). In development is a new carbon reduction strategy, a review of the Local Plan and developing the fourth Local Transport Plan to support this.

2.2 Guidance

2.2.1 Since the 2018 ES, the following guidance, relevant to climate assessment, has been produced.

Design Manual for Roads and Bridges (DMRB) LA 114 Climate

Assessment of the impact of the Scheme on the climate

2.2.2 The impact assessment methodology applied by National Highways is set out in DMRB LA 114 (as updated in June 2021). This requires the calculation of estimated carbon emissions from the construction and operation of the Scheme and the assessment of these against the carbon budget period in which they arise.

LA 114 explains:

"3*.19 Where a project stage extends over multiple carbon budget periods, the project's GHG emissions shall be reported against each carbon budget for each project stage.*

NOTE 1 National policy states 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".

NOTE 2 In the context of NOTE 1, it is considered unlikely that projects will in isolation conclude significant effects on climate.

3.20 The assessment of projects on climate shall only report significant effects where increases in GHG emissions will have a material impact on the ability of Government to meet its carbon reduction targets.

3.20.1 Where assessment conclusions indicate that there is likely to be a 'material impact' on the Government's carbon reduction targets, evidence to support this conclusion should be submitted to the Overseeing Organisation"

2.2.3 Thus, DMRB LA 114 requires assessment against national carbon budgets.

2.2.4 The process of estimating carbon emissions and assessing these against carbon budgets for the 2018 ES aligns with DMRB LA 114. However, DMRB LA 114 provides a specific table format (DMRB LA 114 Table 3.18) which should be used when presenting GHG emissions from a Scheme during each carbon budget period. While the 2018 ES presented net tCO_2e emissions against the carbon budget period, DMRB LA 114 also requires that the estimated carbon emissions for the Do Something scenario during the carbon budget periods is presented. It should be noted that due to the nature of the traffic model and the method for calculating road user emissions, it is only possible to report emissions for the Do Something scenario for the entirety of the traffic model, not just the portion directly relevant to the Scheme. Further detail relating to the traffic model is set out in paragraph 3.1.5 below. Had the results of the 2018 ES been presented in the DMRB LA 114 table reporting format, this would not have changed the outcome of the assessment.

Assessment of the vulnerability of a Scheme to Climate Change

2.2.5 DMRB LA 114 requires that the vulnerability of the Scheme to climate change impacts is assessed against the latest United Kingdom Climate Change Projections published by the Met Office. United Kingdom Climate Projections 2009 (UKCP09) were the latest climate projections published at the time the 2018 ES was produced.

2.2.6 Subsequent to the production of the climate assessment, United Kingdom Climate Projections 2018 (UKCP18) projections were published. During the Examination a comparison was undertaken between UKCP09 and UKCP18 projections to determine if there would be any material change to the vulnerability of the Scheme due to climate change as a result of these updated projections [REP6-025, CC.2.4].

2.2.7 This comparison determined that the new projections would not affect the conclusions of Chapter 14, which is that none of the potential impacts are identified as significant. The comparison undertaken for the Examination remains relevant to the redetermination of the Scheme.

2.2.8 To conclude, while DMRB LA 114 has been published following the close of Examination, the approach taken in the 2018 ES to assess the impact of the Scheme on the climate and the impact of climate change on the Scheme was in line with that in DMRB LA 114. The introduction of DMRB LA 114 does not therefore alter the outcomes of the climate assessment presented in the 2018 ES.

Emissions Factors Toolkit (Defra 2021)

2.2.9 Road user emissions for the Scheme are calculated by applying outputs from the traffic model through the Emissions Factors Toolkit (EFT). The EFT allows users to calculate road vehicle pollutant emission rates for NO_x, PM_{10}, $PM_{2.5}$ and CO_2 for a specified year, road type, vehicle speed and vehicle fleet composition. The EFT is updated periodically due to updates to underlying data including vehicle fleet composition and emissions factors.

2.2.10 The climate assessment completed for the 2018 ES used version 8 of the EFT, the latest available at the time. Following the update of the traffic model, road user emissions were recalculated using version 10.1 of the EFT. This update is based on a revised opening year of 2029 and a future assessment year of 2044. The output of the updated traffic modelling is presented in Appendix 1.1 to the Applicant's Response to Bullet Point Four of the SoS's Statement of Matters; this appendix is presented as a separate document referenced Redetermination-1.4.1. The revised opening year resulted in using an updated Uncertainty Log as part of the 2021 traffic modelling.

2.2.11 The updated road user emissions assessment predated EFT version 11 published in November 2021. As such, it was not possible to use version 11 in time for this response. The publication of EFT v11 provides an updated basic fleet split for England to extend the basic fleet data out to 2050. The basic fleet splits are based on data provided by DfT. The overall CO_2e emissions is likely to decrease with the use of EFT v11 with the updated fleet mix including the projected uptake of EVs up to 2050.

WebTAG Greenhouse Gas Emissions Workbook (May 2021)

2.2.12 This guidance and workbook is used to present greenhouse gas emissions calculated using the Emissions Factor Toolkit. Annual GHG emissions are shown over the 60 year design life of a project split by traded and non-traded sector, both for the 'without-scheme', Do Minimum, and 'with-scheme', Do Something, forecasts.

2.2.13 These workbooks are updated regularly by DfT to account for changes to the TAG Data Book that underpins the overall TAG appraisals across all disciplines. The 2018 ES used the 2017 version of WebTAG while a revised version of WebTAG was published in 2021. However, the format of the WebTAG workbooks have remained unchanged and therefore the format of the outputs used for greenhouse gas assessment remains the same.

2.2.14 Carbon values within WebTAG used to monetise the impact of carbon have been updated for the latest version of WebTAG. However, these are used for the business case for the Scheme and are not used as part of the climate assessment.

3 Secretary of State request for further representations (Paragraph 2, Bullet Point Three, Sub-Bullet One)

3.1 The Secretary of State's request for any update to: the assessment of the impact of the Scheme on the carbon budgets to take account of the Sixth Carbon Budget

2018 ES Assessment

3.1.1 A summary of the UK Government carbon budgets relevant to the Scheme, is provided in **Table 2-1**. At the time the 2018 ES was produced the 6th Carbon Budget had not been published and therefore no assessment against the 6th Carbon Budget was undertaken.

3.1.2 The environmental information used for the 2018 ES assumed the construction phase for the Scheme would start in 2021 and the operational phase in 2026. For the 2018 ES construction emissions were therefore assessed against the 3rd and 4th Carbon Budgets while operational emissions, including road user emissions, were assessed against the 4th and 5th Carbon Budgets. Table 14.16 in the 2018 ES presented the outcome of this assessment. A copy of this table, updated to account for a small, non-material increase of 894 tCO_2e due to a variation in source data from what correctly had been reported in Table 14.14 of the 2018 ES, has been replicated in **Table 3-1** below[12]. As a result of the 2018 ES being produced pre-publication of DMRB LA 114, Do Something Scenario emissions were not required to be presented.

3.1.3 The percentage contribution Scheme emissions made to each relevant carbon budget period was not presented as it was not previously required. However, it was noted on page 24 of Chapter 14 of the 2018 ES that emissions arising as a result of the Scheme represent less than 0.03% of total emissions in any five year carbon budget during which they arise.

Table 3-1 Construction and operation emissions in comparison to national carbon budgets, in the format used for the 2018 ES

Project Stage	Net tCO_2e	Relevant Carbon Budgets
Construction	77,817	3rd Carbon Budget period (2018 to 2022)
	389,083	4th Carbon Budget period (2023 to 2027)

[12] For context, in the 2018 ES, construction carbon emissions are reported in two places. Table 14.14 reports construction emissions as 466,900 tCO_2e. This is the correct number. However, in Table 14.16 (the comparison against carbon budgets), a value of 466,006 tCO_2e was used, a variation of 894 tCO_2e. This small variation does not make a material difference to the outcome of the 2018 ES assessment.

Operation	49,802	4th Carbon Budget period (2023 to 2027)
	136,080	5th Carbon Budget period (2028 to 2032)

3.1.4 To allow for a comparison between data sets, **Table 3-2** presents the data from the 2018 ES in the format required in DMRB LA 114, providing the percentage of carbon budget, the Do Minimum scenario, the Do Something scenario and the net emissions. The Do Minimum column, although not a requirement of DMRB LA 114, has been added for context.

3.1.5 **Table 3-2** presents greenhouse gas emissions arising for the Do Something and Do Minimum Scenarios in the 2018 ES. The variation between the two scenarios provides net emissions as a result of the construction and operation of the Scheme across each carbon budget period. It should be noted that operational emissions are based on the entirety of the traffic model. This model represents a large area of the road network, further details of which can be found in the Traffic Network Diagram [REP-289]. The traffic model area is used to allow for any changes in traffic flows in the wider area to be captured within the assessment. Emissions for the Do Minimum scenario are also reported for the whole traffic model.

Table 3-2 Scheme GHG emissions in 5-year periods aligned with relevant carbon budgets (2018 ES)

Scheme Stage	Estimated total GHG emissions over relevant carbon budgets (tCO_2e) (Do Minimum Scenario)	Estimated total GHG emissions over relevant carbon budgets (tCO_2e) (Do Something Scenario)	Net project GHG emissions (tCO_2e) over relevant carbon budgets*	3rd Carbon Budget	4th Carbon Budget	5th Carbon Budget	6th Carbon Budget
Construction	*0*	*466,900*	*466,900*	*77,817*	*389,083*		
Operation	*424,812,619*	*424,994,445*	*185,882***		*49,802*	*136,080*	*n/a*
Total	*424,812,619*	*425,461,345*	*652,782*	*77,817*	*438,885*	*136,080*	*n/a*
% of carbon budget				*0.0031%*	*0.0225%*	*0.0079%*	*n/a*

*Net emissions = Do Something scenario minus Do Minimum scenario
** Net emissions incorporate a small uplift to include emissions from maintenance activities and energy use during operation, in addition to road user emissions

Updated Assessment

3.1.6 As requested in the Statement of Matters, an assessment of scheme GHG emissions against the UK Government's carbon budgets has been undertaken covering the GHG emissions that are projected to occur across the relevant carbon budget periods up to and including the Sixth Carbon Budget.

3.1.7 The updated assessment, against the relevant carbon budget periods (i.e. the 4th, 5th and 6th Carbon Budgets) has been undertaken and the results are presented in **Table 3-3**.

3.1.8 For the purpose of the assessment outputs presented in **Table 3-3,** Scheme construction activities remain the same as those assessed in the Climate Chapter of the 2018 ES, as described by paragraph 1.3.3 in the Bullet Point Four response to the SoS's Statement of Matters. Total emissions from construction therefore remain the same albeit they now fall under the 4th and 5th Carbon Budget periods rather than the 3rd and 4th due to a shift in the construction timeline. Due to the delay in anticipated start to the Scheme, the updated assessment presented in response to the SoS's Statement of Matters has assumed that the construction phase for the Scheme would start in 2023 and the operational phase would commence in 2029. Updated traffic forecasts considered in this review have also assumed the construction phase for the Scheme would start in 2023 and the operational phase in 2029, with a future assessment year of 2044. The revised opening year does not affect the assessment and the conclusions of the 2018 ES.

3.1.9 Operation of the Scheme is assessed over a 60-year period and now commences within the 5th Carbon Budget period. Operational emissions have also now been assessed for the 6th Carbon Budget period.

3.1.10 Overall, this change in programme does not result in any material change to the outcome of the assessment.

3.1.11 Road user emissions presented in **Table 3-3** are based on the updated traffic model and the use of the Emission Factors Toolkit v10.1 as detailed in paragraph 2.2.9.

3.1.12 **Table 3-3** presents greenhouse gas emissions, updated to take into account the 6th Carbon Budget and updated traffic forecasts, arising for the Do Something and Do Minimum scenarios. The variation between of the two scenarios provides net emissions as a result of the construction and operation of the Scheme across each carbon budget period. As noted above, operational emissions are based on the traffic model which represents a large area of the road network, wider than just the length of the Scheme, further details of which can be found in the Traffic Network Diagram [APP-289]. The traffic model area is used to allow for any changes in traffic flows in the wider area to be captured within the assessment. Emissions for the Do Minimum scenario are also reported for the whole traffic model.

Table 3-3 Scheme GHG emissions in 5-year periods aligned with relevant carbon budgets (updated assessment)

Scheme Stage	Estimated total GHG emissions over relevant carbon budgets (tCO_2e) (Do Minimum Scenario)	Estimated total GHG emissions over relevant carbon budgets (tCO_2e) (Do Something Scenario)	Net project GHG emissions (tCO2e) over relevant carbon budgets*	3rd Carbon Budget	4th Carbon Budget	5th Carbon Budget	6th Carbon Budget
Construction	*0*	*466,900*	*466,900*		*389,083*	*77,817*	
Operation	*528,008,311*	*528,132,855*	*127,322***			*56,588*	*70,735*
Total	*528,008,311*	*528,599,755*	*594,222*		*389,083*	*134,405*	*70,735*
% of carbon budget				*0%*	*0.0200%*	*0.0078%*	*0.0073%*

*Net emissions = Do Something scenario minus Do Minimum scenario
** Net emissions incorporate a small uplift to include emissions from maintenance activities and energy use during operation, in addition to road user emissions

3.1.13 As presented in **Table 3-3** and pursuant to the NPSNN and Planning Act 2008 the Scheme's contribution to the national carbon budget will not have a material impact on the UK achieving its carbon reduction targets, given the small scale of its impact upon emissions and the wide range of policy responses available to Government to manage emissions reductions over time. It should be noted that this assessment is conservative. Given current policy commitments, described at Section 0, it is considered to be an overestimate as the uptake of new electric vehicles in future years would be expected to be higher than the proportions used in the national projections included in Defra's EFT version 10.1 used for the Scheme updated assessment presented in this Statement of Matters response. The EFT used does not take account of any changes in vehicle fleet mix, such as the increase in uptake of electric vehicles (EVs), beyond 2030.

3.1.14 As explained above, the publication of EFT version 11 provides an updated basic fleet split for England to extend the basic fleet data out to 2050. The basic fleet splits are based on data provided by DfT. The overall CO_2e emissions is likely to be decreased with the use of EFT version 11 with the updated fleet mixes including the projected uptake of EVs up to 2050.

3.1.15 Furthermore, the recent publication of both the DfT's Decarbonising Transport Plan[4] and National Highways' Net Zero Plan[9], detailed in Section 2, are likely to further reduce carbon emissions.

3.1.16 **Table 3-4** provides a comparison of the total emissions (tCO_2e) and the percentage of emissions the Scheme contributes during each carbon budget period between the 2018 ES and the updated emissions assessment based on the revised traffic model. The reduction in emissions that fall within the 4th and 5th Carbon Budget are as a result of the changes brought about from changes to climate policy and DMRB guidance, described in Section 2.

Table 3-4 Comparison table

	3rd Carbon Budget	4th Carbon Budget	5th Carbon Budget	6th Carbon Budget
Total emissions (tCO_2e)				
2018 ES	*77,817*	*438,885*	*136,080*	*n/a*
Updated Assessment	*0*	*389,083*	*134,405*	*70,735*
% of carbon budget				
2018 ES	*0.0031%*	*0.0225%*	*0.0079%*	*n/a*
Updated Assessment	*0%*	*0.0200%*	*0.0078%*	*0.0073%*

3.1.17 **Table 3-4** shows that GHG emissions during the 3rd, 4th and 5th Carbon Budgets has decreased since the assessment produced for the 2018 ES as a result of changes in traffic flows predicted, change in the opening year from 2026 to 2029 and the use of an updated version of the EFT (EFT v10.1 instead of EFT v8). While there is a now a value reported against the 6th Carbon Budget, it is very small and not material.

Paragraph 2 Bullet Point Three, Sub-Bullet One - Summary and Conclusion

3.1.18 As presented in **Table 3-4**, the contribution of GHG emissions resulting from the updated assessment of the Scheme is 0.02% of the 4th Carbon Budget, 0.0078% of the 5th Carbon Budget and 0.0073% of the 6th Carbon Budget. Consequently, given these contributions are very small, the Applicant does not consider CO_2e emissions resulting from the Scheme to have a material impact on the Government's ability to comply with the carbon budgets or to have a material effect on the UK meeting its carbon reduction targets. This conclusion remains the same as was presented in the 2018 ES.

4 Secretary of State request for further representations (Paragraph 2, Bullet Point Three, Sub-Bullet Two)

4.1 The Secretary of State's request for any update to: *the direct, indirect and cumulative likely significant effects of the development with other existing and/or approved projects on climate, including greenhouse gas emissions and climate change adaptation, in light of the requirements set out in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations') and in light of paragraphs 5.17 and 5.18 of the National Policy Statement for National Networks*

4.1.1 To support this response the following terms have been interpreted as follows:

- Direct emissions - direct emissions to the atmosphere from relevant activities (e.g. tailpipe emissions from road users or construction vehicles).
- Indirect emissions - indirect emissions resulting from the purchase of electricity (e.g. for infrastructure operation) and/or any relevant downstream activities by third parties within the supply chain (e.g. embodied carbon from the manufacturing of construction products such as concrete).
- Cumulative effects of the Scheme - The consideration of the Scheme's GHG emissions impact relevant to other committed developments included within the traffic model for the Scheme.
- Likely significant effect - An increase in carbon emissions resulting from a proposed scheme that is so significant that the Scheme would have a material impact on the ability of Government to meet its carbon reduction targets (as per paragraphs 5.17 and 5.18 of the NPSNN). The NPSNN does not provide a threshold for significance of direct or cumulative effects, however it notes that is it very unlikely that any road scheme in isolation will impact on the ability of Government to meet its carbon reduction targets. Further, DMRB LA 114 does not provide GHG emission thresholds but refers back to NPSNN paragraph 5.17.

4.1.2 The response to this part of the SoS's request is provided in three parts. The first part relates to the effects on climate, i.e., the GHG aspect of the question and the second part relates to climate vulnerability, i.e. the climate change adaptation aspect. The third part summarises the impacts of parts 1 and 2 in the context of the requirements set out in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations') and in light of paragraphs 5.17 and 5.18 of the NPSNN.

Part 1

Direct, Indirect and Cumulative effects of the Scheme – GHG emissions

4.1.3 Direct and indirect emissions on account of the Scheme are inherently included within the GHG assessment methodology followed in the 2018 ES [APP-052, paragraph 14.3.1].

4.1.4 Indirect emissions encompass the accumulation of embodied emissions that occur throughout the construction supply chain (i.e. an accumulation of various emissions sources such as raw material extraction, intra-manufacturing transportation, manufacturing processes, etc.). The operational tailpipe emissions and construction process emissions from plant/vehicles on site are inherently 'direct' emissions as they are emissions that are directly released to the atmosphere.

4.1.5 The consideration of the cumulative effects of the Scheme with other existing and/or approved projects is inherent within the methodology followed in the 2018 ES through the inclusion of the Scheme and other locally committed developments within the traffic model (see paragraph 15.2.16 of the Cumulative Effects chapter of the Environmental Statement [APP-053], and Section 5 of the Transport Assessment [APP-297]).

4.1.6 The transport forecast inherently considered cumulative Schemes, identified in the Uncertainty Log, which have been included in both the Do Minimum (DM) and Do Something (DS) scenarios for the opening and design years of the Scheme. The forecasts used for the DCO application were informed by an Uncertainty Log (which captures a list of all developments) developed in March 2018. The Uncertainty Log was updated in Winter 2020 and informs the post-decision traffic forecasts set out in the Transport Assessment Review, which is presented as a separate response document (referenced Redetermination-1.4.1) and is Appendix 1.1 of the Applicant's Response to Bullet Point Four. This shows there are no major substantive changes relating to the traffic impact of the Scheme. A further review of the status of developments during the period from Winter 2020 to Autumn 2021 shows there are no developments which would materially after the traffic forecasts.

Part 1 - Summary and Conclusion

4.1.7 As explained above, cumulative emissions are taken into consideration both during the calculation of construction emissions and through the traffic model used as the basis for calculating road user emissions. Accordingly, National Highways does not consider that GHG emissions from the Scheme, including on a cumulative basis, are likely to have any significant effect on the climate, nor will they materially affect the ability of the Government to meet its adopted carbon reduction targets.

4.1.8 Indeed, the assessment identifies that the Scheme will have a reduced impact upon carbon emissions in the 4th and 5th Carbon Budget periods compared to the 2018 ES assessment. Neither the Examining Authority nor the SoS considered the 2018 ES assessment of carbon emissions to

provide a reason for refusing development consent for the Scheme. The updated assessment supports this conclusion.

4.1.9 The updated assessment demonstrates that the GHG emissions associated with the Scheme are not, in law or policy terms, a reason to refuse development consent. The increase would have no material impact on the ability of Government to meet its carbon reduction targets and so the proposed development does not give rise to any conflict with paragraph 5.18 of the NPSNN.

Part 2

Cumulative likely effects of the Scheme with other existing and/or approved projects – climate adaptation

4.1.10 This section provides an explanation as to the requirements for assessing the cumulative impacts as a result of climate change. It considers both the cumulative likely effects of the Scheme with other existing and/or approved projects as well as the in-combination impacts of the Scheme and climate change on receptors in the surrounding environment.

4.1.11 As the focus of the climate vulnerability assessment is not the impact of the Scheme on the climate but of the impact of climate change on the Scheme itself, it is not necessary to undertake an assessment of how the likely effects of climate change on the Scheme are affected by other existing and/or approved projects.

4.1.12 Direct and indirect climate vulnerability effects on the Scheme are included within the Climate Change Resilience (CCR) assessment provided within the Environmental Statement [APP-052, paragraph 14.6.5].

4.1.13 Hazards that may impact the Scheme, identified as a result of the projected changes in climate, are considered to be secondary, and therefore, indirect, impacts. A summary of the potential hazards is presented in Table 14-1, Appendix 14.2 of the 2018 ES [APP-289] and include for example overheating of electrical equipment, such as information and communication systems due to increasing average temperatures.

4.1.14 In-combination climate change impacts, that is, impacts on receptors in the surrounding environment as a result of the combined impact of the Scheme and climate change, were assessed. The results of this assessment are presented in Table 2, Appendix 14.2 of the 2018 ES [APP-289] and include, for example, potential impacts on the surrounding landscape and human health as a result of projected increases in temperatures and the Scheme.

4.1.15 The 2018 ES found that there were no significant direct, indirect or in-combination climate change impacts as a result of the Scheme [APP-052, Section 14.9]. There has been no change since the 2018 ES was published, including the introduction of the net zero target and the 6th Carbon Budget, that affects the conclusion i.e., that the Scheme will not have a material effect on the UK meeting its GHG reduction targets.

Part 3

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 – National Policy Statement for National Networks

The Statement of Matters has requested that the additional information be provided '…*in light of the requirements set out in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and in light of paragraphs 5.17 and 5.18 of the National Policy Statement for National Networks.'*

4.1.16 Further to the Infrastructure Planning (Environmental Impact Assessment Regulations) 2017 (as amended) (the EIA Regulations), the Scheme constitutes EIA development for the purposes of those regulations [APP-003]. The Scheme is therefore subject to the Environmental Impact Assessment process provided for at regulation 5 of the EIA Regulations, which includes the preparation of an environmental statement. An environmental statement was duly prepared and was submitted with National Highway's application for development consent [APP-038 – APP-292].

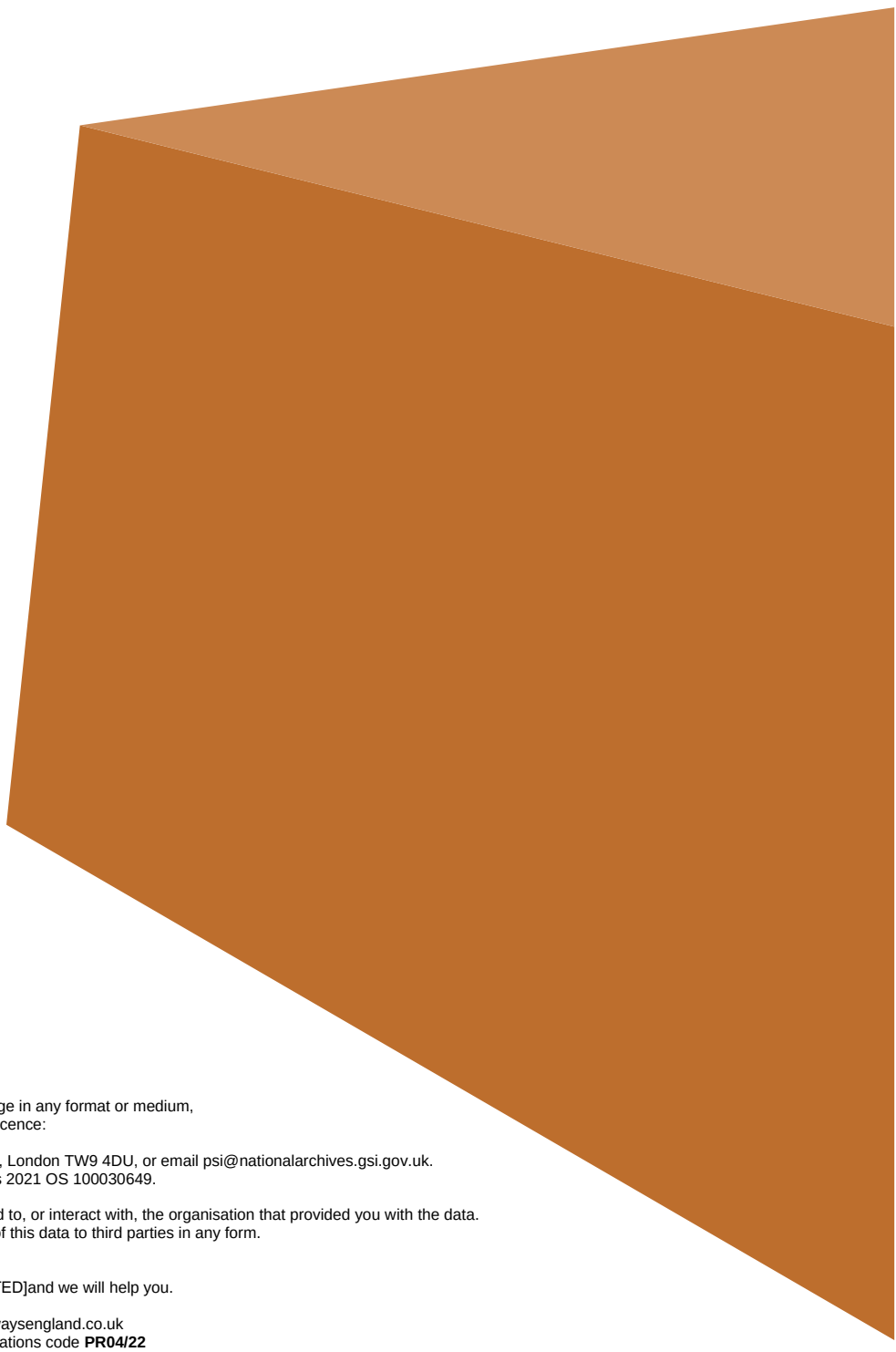
4.1.17 Paragraph 5 of Schedule 4 of the EIA Regulations provides that the environmental statement must, among other matters, include a description of:

"(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;"

4.1.18 The information provided in this response is considered to be environmental information for the purposes of the EIA Regulations. As such the Applicant proposes that consultation on this information will be carried out in accordance with the requirements of Regulation 20 of those regulations.

4.1.19 In relation to paragraphs 5.17 and 5.18 of the NPSNN, this response (see Section 2, NPSNN and Section 3, assessment against the UK carbon budgets), together with the information provided in Chapter 14 of the 2018 ES, demonstrates that the Scheme will not materially affect the ability of the Government to meet its carbon budgets. Accordingly, the increase in carbon emissions that may arise in consequence of the Scheme is not a reason to refuse development consent pursuant to paragraph 5.18 of the NPSNN.



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