

# A27

## Arundel Bypass

Preliminary Environmental Information Report

Volume 4c

Technical Appendices

11 January 2022 – 8 March 2022



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## About this report

Thank you for taking part in our statutory public consultation on the proposed A27 Arundel Bypass Scheme. This consultation is an important step towards delivering the Scheme, which will bring many benefits to local communities and the region's economy, whilst making journeys quicker and safer, and freeing Arundel town and neighbouring communities from congestion.

To inform this consultation, we have prepared a suite of information which you can find on National Highway's website ([www.nationalhighways.co.uk/our-work/south-east/a27-arundel-bypass](http://www.nationalhighways.co.uk/our-work/south-east/a27-arundel-bypass)), and which includes this Preliminary Environmental Information Report (PEI Report). This report is set out in four volumes and describes the environmental setting of the Scheme and our preliminary assessments of the Scheme's potential significant environmental effects as described below:

Volume 1 - PEI Report Non-Technical Summary (NTS), a short summary which uses non-technical language.

Volume 2 - PEI Report, a detailed technical report (in two parts), which introduces the Scheme and describes its details, the alternatives considered, and the approach taken for the environmental assessment. The PEI Report presents and then summarises the preliminary assessment of the likely significant environmental effects of the Scheme as well as considers the potential inter-relationships between the topics covered, and between the Scheme and other developments in the surrounding area.

Volume 3 – PEI Report Figures, which provide further information in the form of figures to support the initial findings presented in Volume 2.

**Volume 4 – PEI Report Technical Appendices, which provide further information in the form of technical information (in three parts) to support the initial findings presented in Volume 2.**

Each volume's Contents Page lists all the topics discussed. Due to their size, Volume 2 is presented in two parts (2a and 2b) and Volume 4 is presented in three parts (4a, 4b and 4c). It should be noted that those topics that are not included in the individual sub-volumes are greyed out.

This report should be read alongside the other supporting consultation materials such as the consultation brochure, which will explain where you can find more details regarding the Scheme and how to provide your comments.

This consultation is an important opportunity for you to share your comments on the Scheme ahead of submission of our Development Consent Order application, which is expected to happen later in 2022. We'd like to hear what you think, so please share any ideas, local knowledge or concerns that you may have. Your feedback to this consultation is important and will continue to help shape the design of the Scheme.

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## Appendix 1-C EIA Scoping Opinion Response

**Table 1-C-1: EIA scoping opinion response**

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
<b>The Planning Inspectorate</b>			
Description of the Proposed Development	2.3.1	The ES should set out, amongst other details, the total site area and length of the Proposed Development along with the design and other relevant features within the main text. The location of the development and description of the physical characteristics of the whole of the Proposed Development should be set out clearly within the ES. A plan showing the red line boundary for the Development Control Order (DCO) limits for the Proposed Development should be provided in the ES to a scale which should be consistent with the other supporting plans for the DCO.	Noted. This will be confirmed within the ES. A plan showing the red line boundary for the Development Control Order (DCO) limits for the Scheme will be included in the ES. Preliminary information (draft Order Limits) has been included in the PEI Report.
Description of the Proposed Development	2.3.2	The location and a description of the physical characteristics of the whole development, including any requisite demolition works and the land-use requirements during construction and operation phases should be set out in sufficient	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		detail so that it is clear what has been assessed in the ES, including figures, tables and other supporting documents as necessary.	
Description of the Proposed Development	2.3.3	Information on demolition works, and the access requirements for each of the phases, along with the land use requirements of the Proposed Development should be included in the ES and an assessment of likely significant effects that may arise from these matters.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report.
Description of the Proposed Development	2.3.5	The Inspectorate expects that at the point of application the ES should include a detailed description of the Proposed Development which includes all of the works for which development consent is sought, supported by clear figures. Details of components such as bridge structures, signage, gantries, lighting, drainage features, landscaping and environmental mitigation features should be provided in the ES. It is recommended that such descriptions are supported by visualisations, such as photomontages and 3D models.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report. Visualisations in the form of photomontages will be included with the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Description of the Proposed Development	2.3.6	There are no specific locations detailed as to which areas will be utilised for environmental mitigation, construction compounds, material storage, and other purposes. Descriptions of such key details and impacts should be expanded and refined within the ES.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report such as embedded mitigation as presented on the Preliminary Landscape and Environment Masterplan (Figure 2-1 PLEM) and construction compound and material storage area as described in chapter 2: The Scheme.
Description of the Proposed Development	2.3.7	The ES should clearly show and describe the land use requirements for construction and operational phases, allowing for differentiation between the different types.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report.
Description of the Proposed Development	2.3.8	The ES should include details of the construction phase such as the working hours, programme of works, construction vehicle movements and access routes, location of construction compounds and other related information used to inform the assessment.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Alternatives	2.3.9	The EIA Regulations require that the Applicant provide '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'.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report.
Alternatives	2.3.10	The Inspectorate would expect to see a discrete section in the ES that provides details of the reasonable alternatives studied and the reasoning for the selection of the chosen option(s), including a comparison of the environmental effects.	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report.
Flexibility	2.3.11	Where the details of the Proposed Development cannot be defined precisely, the Applicant will apply a worst case scenario. The Inspectorate welcomes the reference to Planning Inspectorate Advice Note nine 'Using the 'Rochdale Envelope' in this regard.	Noted.
Flexibility	2.3.12	The Applicant should make every attempt to narrow the range of options and explain clearly in the ES which elements of the Proposed	Noted. This will be confirmed within the ES, though preliminary information has been included in the PEI Report. It should be noted

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		<p>Development have yet to be finalised and provide the reasons. At the time of application, any Proposed Development parameters should not be so wide-ranging as to represent effectively different developments. The development parameters should be clearly defined in the DCO and in the accompanying ES. It is a matter for the Applicant, in preparing an ES, to consider whether it is possible to robustly assess a range of impacts resulting from a large number of undecided parameters. The description of the Proposed Development in the ES must not be so wide that it is insufficiently certain to comply with the requirements of Regulation 14 of the EIA Regulations.</p>	<p>that a range of options were considered at stage 2 and narrowed down until a preferred route was selected (grey route), the preferred route design has been further refined and continues to be developed, the PEI Report describes this process and outlines design options of the Scheme that are still to be determined.</p>
Flexibility	2.3.13	<p>It should be noted that if the Proposed Development materially changes prior to submission of the DCO application, the Applicant may wish to consider requesting a new scoping opinion.</p>	Noted.
General	3.1.2 ES Approach	<p>Aspects/ matters (as defined in Advice Note Seven) are not scoped out unless specifically addressed and justified by the Applicant and confirmed as being scoped out by the</p>	Noted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>Inspectorate. The ES should be based on the Scoping Opinion in so far as the Proposed Development remains materially the same as the Proposed Development described in the Applicant's Scoping Report.</p>	
General	3.1.3 ES Approach	<p>The Inspectorate has set out in this Opinion where it has/ has not agreed to scope out certain aspects/ matters on the basis of the information available at this time. The Inspectorate is content that the receipt of a Scoping Opinion should not prevent the Applicant from subsequently agreeing with the relevant consultation bodies to scope such aspects / matters out of the ES, where further evidence has been provided to justify this approach. However, in order to demonstrate that the aspects/ matters have been appropriately addressed, the ES should explain the reasoning for scoping them out and justify the approach taken.</p>	Noted.
General	3.1.4 ES Approach	<p>The Inspectorate considers that Applicants should make effort to ensure that they engage effectively with consultation bodies and where necessary further develop the scope of the ES to address their concerns and advice. The ES should include</p>	<p>Engagement with stakeholders is ongoing as the design develops. Comprehensive details of all stakeholder engagement will be included in the ES. Preliminary information has been included in the PEI Report.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		information to demonstrate how such further engagement has been undertaken and how it has influenced the scope of the assessments reported in the ES.	
General	3.1.5 ES Approach	Where relevant, the ES should provide reference to how the delivery of measures proposed to prevent/ minimise adverse effects is secured through DCO requirements (or other suitably robust methods) and whether relevant consultation bodies agree on the adequacy of the measures proposed.	The ES will set out the proposed mitigation measures to prevent and minimise adverse effects and how these will be secured through the Development Consent Order (DCO). Engagement with stakeholders will also be summarised within the ES. Preliminary information has been included in the PEI Report.
Relevant National Policy Statements (NPSs)	3.2.1 3.2.2 ES Approach	The NPSs may include environmental requirements for NSIPs, which Applicants should address within their ES. The designated NPS relevant to the Proposed Development is the NPS for National Networks (NPSNN).	The NPSNN and its environmental requirements that are relevant to the Scheme will be addressed within the ES and has been referenced in the PEI Report.
General	3.3.1 ES Approach	The Inspectorate recommends the Applicant uses tables to set out the proposed mitigation and/ or monitoring measures including cross-reference to the means of securing such measures (e.g., a decor requirement)	A schedule of proposed mitigation and monitoring measures will be provided as an appendix to the ES, which will include all those measures identified in each of the

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			technical ES chapters and the methods of securing them.
General	3.3.1 ES Approach	The Inspectorate recommends the Applicant uses tables to identify where details are contained in the Habitats Regulations Assessment (HRA report) (where relevant), such as descriptions of National Site Network sites and their locations, together with any mitigation or compensation measures, are to be found in the ES.	Appropriate cross-referencing between the shadow HRA Report and the ES will be provided. The shadow HRA Report will form an appendix to the ES.
General	3.3.1 ES Approach	The Inspectorate recommends the Applicant uses tables to identify and collate the residual effects after mitigation for each of the aspect chapters, including the relevant interrelationships and cumulative effects;	Residual environmental effects (after mitigation) will be tabulated at the end of each technical chapter within the ES.
General	3.3.1 ES Approach	The Inspectorate recommends the Applicant uses tables to describe any remedial measures that are identified as being necessary following monitoring	The need for any remedial measures required for mitigation will be set out within the ES as necessary and will consider the use of tables for this purpose.

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General	3.3.1 ES Approach	The Inspectorate recommends the Applicant uses tables to demonstrate how the assessment has taken account of this Opinion.	This Scoping Opinion Response table will be updated as required and provided as an appendix to the PEI Report and ES. It will document how the assessment has and will continue to take account of the EIA Screening Opinion.
General	3.3.2 ES Approach	The Applicant should ensure that the ES accompanying that application distinguishes between; effects that primarily derive from the integral works which form the proposed (or part of the proposed) NSIP and those that primarily derive from the works described as Associated Development. This could be presented in a suitably compiled summary table.	Where relevant, this will be clearly described in the ES to distinguish any 'Associated Development' from the rest of the works that form part of the Scheme and will consider the use of tables for this purpose.
Figures	3.3.3 ES Approach	Some of the figures (i.e. Figure 4, 5 and 6) in the Scoping Report are difficult to interpret due to the number of layers being shown. The Applicant is reminded that the ES should be clear and accessible to readers.	This is noted and all figures in the ES will aim to ensure as much clarity as possible.
Baseline Scenario	3.3.4 ES Approach	The ES should include a description of the baseline scenario with and without implementation of the development.	The ES will set out both a baseline and a future baseline scenario.

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Forecasting Methods or Evidence	3.3.5 ES Approach	The ES should contain the timescales upon which the surveys which underpin the technical assessments have been based.	This information will be included within each technical ES chapter where appropriate.
Forecasting Methods or Evidence	3.3.6 ES Approach	The Inspectorate expects the ES to include a chapter setting out the overarching methodology for the assessment, which clearly distinguishes effects that are 'significant' from 'non-significant' effects. Any departure from that methodology should be described in individual aspect assessment chapters.	This will be presented within the overarching assessment methodology ES chapter and where appropriate within the various technical ES chapters. Preliminary information has been included in the PEI Report.
Forecasting Methods or Evidence	3.3.7 ES Approach	The ES should include details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Noted. This will be confirmed within the ES through the assumptions and limitations section in each environmental discipline chapter. It should be noted that preliminary information has been included in the PEI Report.
Residues and Emissions	3.3.8 ES Approach	The EIA Regulations require an estimate, by type and quantity, of expected residues and emissions. Specific reference should be made to water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and	These details will be described within the ES within the various technical ES chapters, as required.

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		types of waste produced during the construction and operation phases, where relevant.	
Residues and Emissions	3.3.9 ES Approach	The Inspectorate notes that heat and radiation effects have been scoped out for assessment on the basis that they are unlikely to arise due to the nature of the Proposed Development. The Inspectorate agrees that significant heat and radiation effects are unlikely and that this matter may be scoped out of the ES.	This has been scoped out of further consideration.
Residues and Emissions	3.3.10 ES Approach	The Applicant's Scoping Report contains a chapter on materials. This chapter refers to waste but does not make reference to consideration of any precise quantities or residues. The ES should include this information and assess the impacts associated for example, in terms of increased transport/HGV movements, emissions to air and noise etc.	The Material Assets and Waste ES chapter will include information on the types and quantities of waste that are expected to arise from construction of the Scheme and an assessment of effects and significance in line with DMRB LA 110. Impacts and effects on other environmental aspects such as air quality and noise as a result of associated traffic movements will be assessed in the respective ES chapter where appropriate.
Mitigation and Monitoring	3.3.11 3.3.12 ES Approach	Any mitigation relied upon for the purposes of the assessment should be explained in detail within the ES. The likely efficacy of the mitigation proposed should be explained with reference to	All required mitigation will be clearly set out in each technical ES chapter. A schedule of proposed mitigation and monitoring measures will also be provided as an appendix to the

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		<p>residual effects. The ES should also address how any mitigation proposed is secured, with reference to specific decor requirements or other legally binding agreements. The ES should identify and describe any proposed monitoring of significant adverse effects and how the results of such monitoring would be utilised to inform any necessary remedial actions.</p>	<p>ES, which will include all those measures identified in each of the technical ES chapters and the methods required to secure them. Residual environmental effects (after mitigation) will be tabulated at the end of each technical ES chapter. Should any remedial measures be identified as being necessary then these will also be outlined in the various technical ES chapters and in the above mentioned schedule.</p>
<p>Risks of Major Accidents and/or Disasters</p>	<p>3.3.13 3.3.14 ES Approach</p>	<p>The ES should include a description and assessment (where relevant) of the likely significant effects resulting from accidents and disasters applicable to the Proposed Development. The Applicant should make use of appropriate guidance (e.g. that referenced in the Health and Safety Executives (HSE) Annex to Advice Note 11) to better understand the likelihood of an occurrence and the Proposed Development's susceptibility to potential major accidents and hazards. The description and assessment should consider the vulnerability of the Proposed Development to a potential accident or disaster and also the Proposed Development's potential to cause an accident or disaster. The</p>	<p>The ES will include description and assessment of major events where relevant within each ES chapter. Appropriate guidance will be used (e.g., as provided in HSE Annex of Advice note 11). Where further design mitigation is unable to remove the potential interaction between a major event and a particular topic, the relevant ES chapter will identify the potential consequence for receptors covered by the topic and give a qualitative evaluation of the potential for the significance of the reported effect to be increased as a result of a major event.</p>

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		assessment should specifically assess significant effects resulting from the risks to human health, cultural heritage or the environment. Any measures that will be employed to prevent and control significant effects should be presented in the ES.	
Risks of Major Accidents and/or Disasters	3.3.15 ES Approach	With respect to major events (the Applicant’s term for major accidents and disasters). The Inspectorate agrees that effects from major events could be reported on in other aspect chapters.	Noted.
Climate and Climate Change	3.3.16 ES Approach	The ES should include a description and assessment (where relevant) of the likely significant effects the Proposed Development has on climate (for example having regard to the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change. Where relevant, the ES should describe and assess the adaptive capacity that has been incorporated into the design of the Proposed Development. This may include, for example, alternative measures such as changes in the use of materials or construction and design	Noted. The preliminary assessment is presented in the PEI Report, with detailed assessment to be included in the ES.

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		techniques that will be more resilient to risks from climate change.	
Transboundary Effects	3.3.18 3.3.19 ES Approach	The Inspectorate recommends that the ES should identify whether the Proposed Development has the potential for significant transboundary effects and if so, what these are and which EEA States would be affected.	This will be clearly identified within the ES, but significant transboundary environmental effects are not anticipated at this stage.
A Reference List	3.3.20 ES Approach	A reference list detailing the sources used for the descriptions and assessments must be included in the ES.	References will be provided as footnotes in each ES chapter. Preliminary references have been included in the PEI Report.
Coronavirus (COVID-19) Environmental Information and Data Collection	3.4.3 ES Approach	Applicants should make effort to agree their approach to the collection and presentation of information with relevant consultation bodies. In turn the Inspectorate expects that consultation bodies will work with Applicants to find suitable approaches and points of reference to allow preparation of applications at this time.	Consultation has taken place with relevant consultation bodies during design development and throughout the EIA process to agree approaches to assessment and to collect data where required. This consultation will be documented in the ES.

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Confidential and Sensitive Information	3.5.1 3.5.2 ES Approach	Where documents are intended to remain confidential the Applicant should provide these as separate documents with their confidential nature clearly indicated in the title and watermarked as such on each page. The information should not be incorporated within other documents that are intended for publication or which the Inspectorate would be required to disclose under the Environmental Information Regulations 2004,	Noted.
Construction traffic assessment	4.1.1	The Scoping Report states that the construction phase is programmed to last for three years and as such an assessment of impacts on air quality from construction traffic should be undertaken in accordance with Highways England DMRB LA 105 Air Quality guidance and appended to the ES.	Further assessment of construction phase traffic will be completed within the ES in line with the DMRB LA 105 guidance.
An assessment of all pollutants except NO2 and PM10.	4.1.2	Sufficient evidence has not been provided to justify scoping out PM2.5. The ES should include an assessment of impacts resulting from increases of PM2.5. The ES should assess impacts from increases of all other relevant pollutants identified under the EU ambient air quality directive resulting from the	As set out in the EIA Scoping Report within paragraph 6.8.4. .." <i>PM<sub>2.5</sub> will not be assessed with air quality modelling as it is not a requirement of DMRB LA 105. The UK currently meets its legal requirements for the achievement of the PM<sub>2.5</sub> air quality thresholds and the modelling of PM<sub>10</sub> can be used to demonstrate that the Scheme does</i>

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		Proposed Development, where likely significant effects can occur.	<p><i>not impact on the PM<sub>2.5</sub> air quality threshold. Baseline data in the approximate area of the previous TRA also indicates PM<sub>2.5</sub> concentrations are well within the relevant air quality objective." To provide further detail, the monitoring referred to in paragraph 6.8.4 is the PM<sub>2.5</sub> concentration monitored at Worthing Grove Lodge/Lyons Farm AQMA, which in 2018 was 10µg/m<sup>3</sup> compared to an objective of 25 µg/m<sup>3</sup> (See paragraph 6.4.8 of the EIA Scoping report). This is 60% lower than the air quality objective for PM<sub>2.5</sub> of 25 µg/m<sup>3</sup>, before any further improvements in air quality occur in the future due to anticipated improvements in vehicle emissions and background sources of pollution.</i></p> <p>As the air quality assessment within the ES will focus on the significance of pollutant concentrations that are in excess of objective values, this monitoring shows that PM<sub>2.5</sub> quantitative assessment is not required, as PM<sub>2.5</sub> concentrations are so low in the anticipated study area, even within poorer locations of air quality, such as an AQMA. However, as also set out in EIA Scoping Report paragraph 6.8.4 PM<sub>10</sub> concentrations</p>

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			<p>will be presented in the ES to re-confirm that this position is correct for PM<sub>2.5</sub>. This approach can be adopted as PM<sub>2.5</sub> (particulates with a diameter of 2.5µm or less) is contained within the larger PM<sub>10</sub> (particulates with a diameter of 10µm or less) size fraction. This approach is in line with the policy test within the National Networks National Policy Statement (NNNPS) for air quality which focuses on the significance of effects for concentrations of pollutants above air quality thresholds.</p> <p>The ES will also include consideration of NO<sub>2</sub> as the other relevant pollutant identified under the EU ambient air quality directive.</p>
Study area	4.1.3	The ES should include a figure visually depicting the air quality study area for the assessment, the ARN and the study area for the construction phase impacts. The extent of the study area should be agreed with relevant consultees, where possible.	As set out in DMRB LA105 guidance, the study area within the air quality assessment will be determined using the Affected Road Network (ARN) identified through application of the DMRB traffic screening criteria for air quality. Following DMRB LA105 guidance, a figure depicting the ARN will be included within the ES. The study area for the PEI and ES has been discussed during consultation

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			with the relevant local authority air quality officers.
Air Quality Management Areas (AQMA)	4.1.4	The ES should clearly set out and justify the choice of selected AQMAs included for assessment. The ES should include a map depicting the location of these AQMAs relevant to the boundary of the Proposed Development.	As set out in DMRB LA105 guidance, receptors included within the air quality assessment, including receptors within AQMAs, will be selected based on their location being within 200m of the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area will be included within the assessment. The ES will include a constraints map for air quality, which will include the location of any relevant AQMAs.
NO2 diffusion tube monitoring	4.1.5	The ES should describe how the 50 locations for NO2 diffusion tube monitoring previously undertaken by Highways England were decided. All relevant baseline data, necessary to inform the assessment of significant effects, should be included in the ES.	The previous contractor in consultation with National Highways identified a selection of sites that were suitable for determining baseline conditions in the study area for the Scheme, for use within future assessments. Relevant baseline data to inform the assessment will be described and included within the ES. A further scheme specific NO <sub>2</sub> diffusion tube monitoring campaign at 12 sites

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			is currently underway for use in the ES chapter.
Assessment of impacts	4.1.6	The ES should assess the impacts to the designated sites identified within proximity to the ARN from the Proposed Development alone and cumulatively with other development. Specific mitigation measures required to address the effects on these sites from air pollutants should be identified and secured.	<p>As set out within section 6.8.13 and 6.8.14 of the EIA Scoping Report, the assessment will compare traffic scenarios which include the following opening year scenarios for the assessment of impacts on designated sites:</p> <ul style="list-style-type: none"> <li>• opening year (2027) Do-Minimum (without the Scheme); and</li> <li>• opening year (2027) Do-Something (with the Scheme)</li> </ul> <p>These scenarios include committed development traffic, and so are inherently cumulative. It is not possible to consider impacts of the Scheme in isolation as this scenario would be an unrealistic scenario to consider. Mitigation will be identified and secured through the OMP if required.</p>

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Sensitive receptors	4.1.7	The ES should make specific reference to fish and other aquatic organisms as sensitive receptors due to the potential for adverse effects on these species from construction dust entering watercourses. All receptors included within the assessment should be agreed with relevant consultees, where possible.	DMRB LA105 guidance considers designated ecosystem sites that are sensitive to changes in air quality. Water courses (including fish and other aquatic organisms) are not typically considered to be sensitive to changes in air quality and so will not be considered within the air quality assessment for the Scheme. Standard dust suppression techniques will be employed during construction, as set out in the first iteration EMP. Receptors will be discussed with relevant consultees once the study area (Affected Road Network) for the ES stage has been defined.
Construction Environmental Management Plan (CEMP) and Outline Environmental Management Plan (OEMP)	4.1.8	The Scoping Report indicates that construction vehicle and plant emissions are unlikely to be significant but does not provide data to support this conclusion. The ES should provide justification for this conclusion and fully describe all envisaged mitigation measures for the construction phase in the CEMP. Control measures and standard dust mitigation should be fully described within the OEMP. The ES should explain how both the OEMP and the CEMP	The ES chapter will include further information to outline the rationale for any construction vehicle or plant scoping decisions. The need for control measures in addition to standard dust mitigation will be identified as part of the assessment and will be included in the first iteration of the EMP, which will be appended to the ES and secured through the DCO.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		derived from the OEMP will be secured through the DCO or other legal mechanism.	
Monitoring	4.1.9	Where the air quality assessment identifies the potential for likely significant air quality effects on receptors during construction and operation, the ES should explain the Applicant's provisions in relation to air quality monitoring and mitigation.	<p>As outlined in section 6.6 of the EIA Scoping Report, construction phase impacts on human health related to air quality would be temporary (during the period of the construction works only) and would be suitably minimised by the application of industry standard mitigation measures, which will be included in the EMP. The need for control measures in addition to standard dust mitigation will be identified as part of the assessment and will be included in the first iteration of the EMP, which will be appended to the ES.</p> <p>Operational impacts on air quality may also require appropriate mitigation measures. The requirement for any operational mitigation or monitoring of air quality impacts will be identified and discussed within the ES chapter.</p>
Study area	4.2.2	The proposed study area should be explained and fully justified in the ES. The extent of the	The Study Area to be adopted in the ES is to be agreed with Historic England and West

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		study area should be agreed with relevant consultees, where possible.	Sussex County Council. This determination of the ES study area will be explained fully within the ES Chapter. This will be explained and justified in the ES, preliminary information is set out in the PEI Report.
Zone of Theoretical Visibility (ZTV)	4.2.3	The ZTV should be fully explained and justified in the ES with reference to the study area for designated and non-designated cultural heritage assets. The Scoping Report states that the ZTV will also consider physical and historical connectivity and relationships, changes to noise levels, air quality and traffic. The ES should make clear how these related aspects affect the cultural heritage assets and be cross referenced to other relevant ES chapters as necessary.	The cultural heritage and landscape and visual teams have worked closely together in the production of the ZTV. The assessment will also consider the potential for impacts beyond just visual, including those associated with noise and lighting. This will be explained and justified in the ES, preliminary information is set out in the PEI Report.
Supporting figures/plans	4.2.4	The number of layers on Figure 6 make it difficult to discern where the scheduled monuments and other environmental features are located respectively to each other. The ES should provide figures which clearly show locations of designated and non-designated assets to differentiate these from other designations as this is currently unclear in Figures 4, 5 and 6.	The ES will include more detailed figures that will show the relationship between the Scheme and all relevant designated and non-designated cultural heritage assets. The comment on the clarity of figures is noted and all figures included in the ES will be clear.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Archaeological mitigation strategy – potential impacts	4.2.5	Potential impacts on the preservation potential of heritage assets due to changes in soil saturation and through water management should be considered in the ES. Where the assessment identifies the potential for likely significant effects on heritage assets, relevant mitigation measures should be set out and agreed with historic environment consultees, where possible.	Impacts to the archaeological resource arising from changes to the water table and soil saturation will be considered in the ES and appropriate mitigation will be presented where required. The mitigations strategy will be agreed with WSCC and Historic England.
Mitigation measures	4.2.6	All identified mitigation measures should be fully described in the ES and demonstrably secured.	All measures to mitigate likely significant adverse effects to both designated and non-designated cultural heritage assets arising during pre-construction, construction, or operation phases will be agreed to with WSCC and Historic England and fully described in the ES and appropriately secured.
Archaeological Notification Areas	4.2.7	The Proposed Development crosses close to and through areas identified on Figure 4 as Archaeological Notification Areas. The ES should provide details as to what these areas are and assess the potential effects which the Proposed Development may have on them. Mitigation	Details of the nature of the Archaeological Notification Areas will be provided in the Desk-Based Assessment (DBA) which will be appended to the ES and impacts to these areas of archaeological potential will be considered within the ES. Mitigation measures will be agreed to with the relevant

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		measures should be included and secured where necessary.	authorities, presented in the ES and appropriately secured.
Historic Parkscapes	4.2.8	Figure 4 shows the line of the Proposed Development passing through two areas adjacent to Walberton and Brookfield, which are identified as Historic Parkscapes. The ES should provide details regarding the implications of this designation for the Proposed Development and include an assessment of effects on the Historic Parkscape as a result of the Proposed Development. The assessment should cross reference to the landscape and visual assessment where relevant.	Historic landscape, including parks, will be considered within the assessment. This will be undertaken in consultation with the landscape and visual impact assessment specialists to ensure consistency of approach.
Photomontages	4.2.9	The Scoping Report states that agreement will be sought on the locations for photomontages as visual representations of the Proposed Development. This agreement should include consultation with Historic England on which key locations would demonstrate the visual impact of the Proposed Development on the setting of all affected cultural heritage assets using verified photomontages in key locations.	Relevant visualisations will be prepared to aid the assessment of effects to the setting of heritage assets. The location and type of visualisation will be agreed with consultees as part of the consultation process. These will be prepared in tandem with the Landscape and Visual impact assessment.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Future maintenance activities.	4.3.1	The Inspectorate agrees that significant effects from future maintenance activities are unlikely to arise and this matter can be scoped out of the ES.	This has been scoped out of the EIA.
Night Time Lighting Assessment	4.3.2	The Inspectorate does not agree to scope this matter out. The ES should provide details of lighting which will be used both during construction and operation. The effects of any lighting to be used for the Proposed Development should be assessed for sensitive receptors which are located both inside and outside of the 'Dark Sky' landscape who may be impacted. Photomontages should be included where appropriate.	Night-time fieldwork indicates that there will not be significant night-time effects. Night time photographs will be included in the application to illustrate the baseline and to support the assessment, but night time photomontages are not considered appropriate.
Key professional standards and guidelines.	4.3.3	The ES should reference all of the relevant professional guidelines produced by the Landscape Institute – Visual Representation of Development Proposals (2019), Reviewing Landscape and Visual Impact Assessments (LVIAs) in addition to National Infrastructure Commission's Design Principles for National Infrastructure (2020).	These are referred to within the Landscape and Visual PEI Report chapter and will be referenced within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Study Area	4.3.4	The Inspectorate considers that the study area should be informed by the type of visual receptors and the nature, extent and severity of likely impacts, with reference to the ZTV rather than setting specific distances for the assessment. The study area should be agreed with relevant consultees and depicted on a plan in the ES.	The Landscape and Visual chapter of the PEI Report outlines how the Landscape and Visual Impact Assessment (LVIA) study area has been refined since scoping in response to consultation, desktop study and fieldwork. It includes the draft Order Limits Boundary and the wider landscape and has been informed by the type of visual receptors and the nature, extent and severity of likely impacts, with reference to the ZTV.
Viewpoints	4.3.5	A record should be made of efforts which are made to agree viewpoint locations with relevant consultation bodies. The viewpoints used in the assessment should be depicted on supporting plans/ figures in the ES.	Minutes have been taken for the meeting held with stakeholders to discuss viewpoint locations. The EIA Scoping Opinion also informed viewpoint locations. The Landscape and Visual PEI Report chapter will provide another opportunity for stakeholders to review the identified viewpoint locations and feedback will be recorded. A viewpoint plan will be provided to accompany the ES.
Assessment of structures	4.3.6	The ES should include details of the heights of new structures such as bridges, lighting columns and soil storage areas, and how they have been considered within the assessment.	Heights of new structures, including any limits of deviation, will be clearly described and considered within the assessment included in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Operation phase Year 15 assessment	4.3.7	As set out in paragraph 3.42 of DMRB LA107, the ES should assess the Operational Phase at Year 15 in the winter, as well as in the summer, reflecting the worst case scenario, when trees and landscape planting are not in leaf.	The operational phase in Year 15 will be assessed in both winter and summer in the ES.
Mitigation	4.3.8	The mitigation measures referred to in the Scoping Report should be described within the ES and appropriately secured through the DCO.	The mitigation measures described in the EIA Scoping Report will be carried through to the ES and will be appropriately secured through the DCO.
Visual receptors	4.3.9	This list should be expanded to include recreational receptors and users of community facilities such as users of recreational facilities such as parks and playing fields; and users of libraries and community halls. Anglers should also be added to this list of receptors.	The Landscape and Visual PEI Report chapter addresses the additional recreational receptors , users of community facilities and anglers as requested.
Tree removal and replacement	4.3.10	With reference to the proposed tree survey, the ES should explain the efforts made to retain any Category A and B trees identified within the survey (in particular any high value veteran and ancient trees/woodlands). Once designs of the scheme and construction methodologies have been finalised, an arboricultural method statement and a tree protection plan (TPP) should	The arboricultural assessment (including a Tree Protection / Removal Plan) that will be appended to the ES, will include methodologies to avoid and limit tree loss, including translocating existing trees where viable, and providing protection to retained vegetation. Mitigation of any tree loss in the form of new planting or proactive

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		be included within, the ES. If the removal of trees from the order limits is required, a tree removal plan should be provided and the ES should set out its strategy to mitigate for loss of existing trees during construction.	management will be detailed in the Landscape and Environment Masterplan and landscape and ecological management plan.
Hedgerow removal and replacement	4.3.11	The ES should provide details regarding the extent of hedgerow loss as a result of the Proposed Development. The strategy to mitigate for such loss e.g. replacement planting should be explained and secured in the DCO, where relevant.	The ES will describe any proposed hedgerow loss. Mitigation planting will be set out in the Landscape and Environment Masterplan and landscape and ecological management plan, which will be secured by the DCO.
Construction compounds	4.3.12	The Applicant should include information regarding the locations of all construction compounds in the ES and consider these as part of the LVIA. The LVIA should take into account the visual impact of the key construction traffic routes.	The ES will assess construction landscape and visual impacts, including construction traffic and compound locations.
Monitoring arrangements	4.3.13	The ES should provide details of how replacement planting and landscaping will be monitored in the future to ensure its effectiveness as mitigation.	Future management of planting will be advised as part of the DCO application process. This includes advice from other disciplines to maximise the likelihood of successful implementation of new and translocated planting for mitigation and

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			enhancement where possible. Details will be provided in the landscape and ecological management plan.
Tree removal and replacement	4.3.10	With reference to the proposed tree survey, the ES should explain the efforts made to retain any Category A and B trees identified within the survey (in particular any high value veteran and ancient trees/woodlands). Once designs of the scheme and construction methodologies have been finalised, an arboricultural method statement and a tree protection plan (TPP) should be included within, the ES. If the removal of trees from the order limits is required, a tree removal plan should be provided and the ES should set out its strategy to mitigate for loss of existing trees during construction.	The arboricultural assessment that will be appended to the ES will include methodologies to avoid and limit tree loss, including translocating existing trees where viable, and providing protection to retained vegetation. Mitigation of any tree loss in the form of new planting or proactive management will be detailed in the Landscape and Environment Masterplan and landscape and ecological management plan.
Arable Weeds	4.4.1	The Applicant has proposed to scope out surveys for arable weeds stating that there is already sufficient information to inform the ecological assessment. Previous surveys were carried out in 2017 but surveys of the western extent of the Proposed Development were not undertaken. The ES should include up to date survey information	Further surveys for arable weeds have been undertaken in July 2021. The results will be reported within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		which covers the full extent of the Proposed Development and the relevant study area. In the absence of this information, the Inspectorate is unable to agree to scope this matter out.	
Study Area	4.4.2	The extents of study areas used within the ES should be consistent to avoid confusion. The ES should provide justification for the zone of influence for watercourses, being limited to 2km from the Proposed Development.	The study areas used will be clearly explained in the ES.
Study Area	4.4.3	The ES should provide justifications for the extents used for the study areas for individual species.	The study areas used will be clearly explained and justified in the ES for individual species.
Notable habitats	4.4.4	The ES should explain how the importance rating of notable habitats has been defined.	The importance assigned to ecological features will be in accordance with the guidance outlined in Table 3.9 of DMRB LA 108 (revision 1).
Baseline Conditions	4.4.5	The ES should provide details regarding the existing data which the Applicant has collated regarding the River Arun habitats and associated fauna, including fish, and provide further detailed	Tributaries and ditches in the River Arun floodplain have been surveyed. The survey effort for 2020 and 2021 was informed by previous survey work, scoping surveys and

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		assessment where likely significant effects are identified for the watercourse or adjacent habitats. Further survey effort should include ditches as well as the main River Arun.	gap analysis. The results of the surveys will be detailed within the ES.
Notable road verge site	4.4.6	The ES should provide further details regarding the site and its habitats where significant effects are likely.	The ES will assess the potential for significant effects on the designated road verge from construction and operation of the Scheme.
White clawed crayfish	4.4.7	It should be confirmed in the ES that surveys for aquatic invertebrates included white clawed crayfish, or demonstrated that that the need for such surveys can be ruled out.	White-clawed crayfish are considered to be absent from the Study Area and the need for surveys has been scoped out. This approach will be justified in the ES.
Impacts on Arun Valley Special Protection Area (SPA) and Ramsar	4.4.8	The ES should provide the detail of the assessments that support the conclusion that habitats in proximity to the Proposed Development do not represent functionally linked land of the qualifying bird species of the Arun Valley SPA/Ramsar. Where possible, the Applicant should present evidence that this conclusion is agreed with Natural England.	An HRA screening assessment has been undertaken and it is considered that there will be no likely significant effect on the Arun Valley SPA/Ramsar. This HRA screening assessment is appended to the PEI Report. This conclusion has not yet been agreed with Natural England. Consultation with Natural England will be undertaken with regards to the HRA screening assessment and details of that consultation will be included in the ES.

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Impacts from new lighting	4.4.9	The ES should assess the proposed lighting to be used during construction and operation, and also assess the effects from the introduction of vehicle lights into an area which presently has very little lighting. The ES should ensure measures are taken to minimise impacts on sensitive ecological receptors.	The ES will consider the effects of lighting on ecological features such as bats. Mitigation measures to minimise impacts on ecological features will be outlined in the ES.
Impacts on barn owl	4.4.10	The ES should assess impacts on barn owl during construction as well as operation and this should include impacts from habitat loss, disturbance, lighting, including lights from vehicles using the new road and vehicle strike.	The ES will assess the potential for significant effects on barn owl from construction and operation of the Scheme.
An assessment of structural / engineering geology	4.5.1	The Inspectorate notes that a specific structural / engineering geology chapter is not currently proposed to be included in the ES, on the basis that this information will inform the design development. However, an assessment of sinkholes as a major event is proposed to be included within the ES. The applicant should include information on structural / engineering geology in the ES, where significant effects are likely to arise.	Baseline information on key geological features (like solution features) are included in the Geology and Soils chapter of the PEI Report, although reference is made to geotechnical reports for the assessment and details on risk. Geotechnical reports include the Ground Investigation Report (GIR) for the assessment of structural and engineering geology, and the Geotechnical Design Report (GDR) for slope stability and issues around potential solution features. The GIR will be submitted as part of the DCO application. The

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			ES will summarise relevant assessment and reference the reports accordingly.
Soil resources	4.5.2	The Inspectorate agrees to scope this matter out as the operation of the Proposed Development is not anticipated to result in further loss or impact on soil resources during operation.	Noted.
Construction and Maintenance workers	4.5.3	The Inspectorate agrees to scope this matter out on the basis that workers will be protected from significant effects under Health and Safety Legislation during construction and maintenance phases. The OEMP should include relevant measures to address risks to workers arising from the findings of the ground investigation.	The first iteration of the EMP will include relevant measures to address risks to workers as defined by the findings of the ground investigation.
Unexploded ordnance	4.5.4	No assessment or reference is made to any preliminary assessment of Unexploded ordnance (UXO). The ES should consider the potential for UXO to be present and provide details of the results of any commissioned UXO assessment, where relevant.	The Geology and Soils chapter of the PEI Report includes reference to a specialist detailed UXO report (UXO Threat & Risk Assessment) and includes the mitigation measures recommended. There is no established method within EIA to assess UXO.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Study Area	4.5.5	<p>The ES should contain a figure depicting the 1km and 250m buffer zones for groundwater, surface water and potable water abstractions and geological and land contamination respectively. Figure 4 of the Scoping Report shows a number of historic landfills as being present within the full 1km search buffer however the assessment only considers those historic landfills within 250m. The presented figures, buffer zones and terminology should be consistent throughout.</p>	<p>A figure depicting the 1km and 250m limits to the Geology and Soils study area is included in the PEI Report (Figure 9-1). A figure showing controlled waters and abstractions is also included within the Road Drainage and Water Environment PEI Report chapter. The Geology and Soils chapter cross references accordingly.</p> <p>The 250m radial zone is considered appropriate for the consideration of historical and current land uses which may have resulted in land contamination within the study area. This also aligns with established industry practice for defining land contamination study areas for EIA. The extended study area for controlled waters receptors is included to account for receptors that may be impacted upon by any identified or potential land contamination within the 250m geology and soils study area.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Baseline Conditions	4.5.6	The ES should include information explaining the potential impacts from contamination and the effects this may have on the sensitive receptors identified, cross references should be made between relevant chapters.	The assessment to be reported within the ES within the Geology and Soils chapter will consider the SDNP, Binsted Wood Complex LWS and ancient woodland as receptors to any potential contaminated land, where applicable. The cross reference to Chapter 9 in the EIA Scoping Report was intended to direct the reader to more detail on these features rather than for detail on how potential contaminated land may impact on these features.
Groundwater receptors including Secondary A and Secondary undifferentiated aquifers.	4.5.7	The ES should include 'Principle aquifer within the White Chalk Subgroup' within the list of identified receptors. Paragraph 14.4.11 states that "Whilst not directly encountered, piling for the structure across the River Arun floodplain may reach the Chalk bedrock geology, including the Culver Chalk Formation" (part of the White Chalk Subgroup). The ES should assess the aquifer as a sensitive receptor where the piling design indicates that the aquifer may be impacted.	The Principal Aquifer has been included as an identified receptor in the PEI Report. Where the potential for construction to impact on the Principal Aquifer within the White Chalk is identified, an assessment of impact will be undertaken and reported in the ES.

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Quaternary Deposits and Mineral Safeguarding Area	4.5.8	A complex series of quaternary deposits have been identified within a Mineral Safeguarding Area (MSA). They are a source of aggregates, including sharp sand and gravel. The Scoping Report states these are discussed in Chapter 11; however, no further mention is made of either the quaternary deposits or the MSA. The ES should assess and report effects on these receptors from the Proposed Development and this should be contained in the relevant aspect chapter with appropriate cross referencing.	DMRB LA109 no longer includes for the assessment of minerals safeguarding within the Geology and Soils aspect scope. Minerals safeguarding is now considered within the Material Assets and Waste aspect scope. Information on the presence of MSA is included in the PEI Report Geology and Soils chapter, however reference is made to the Material Assets and Waste chapter for further discussion on these.
Baseline Conditions	4.5.9	The ES should ensure the reporting of groundwater vulnerability is consistent throughout the ES and ensure that the relevant sensitive receptors are fully assessed.	Where reference is made to groundwater vulnerability in the Road Drainage and Water Environment ES chapter, this will be checked for consistency throughout the ES, including the Geology and Soils chapter.
Ground Investigations	4.5.10	It is recommended that the scope of ground investigation work (to include consideration of soil, groundwater, ground gas and geotechnical parameters) should be agreed with the local authorities and the Environment Agency.	National Highways Ground Investigation framework contractors consulted with the Environment Agency to gain permits for the Ground Investigation works over the flood plain areas.
Soil Resources	4.5.11	The ES should explain how impacts to soil will be managed.	A first iteration of the Environmental Management Plan (EMP) will be prepared as

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		The Applicant may wish to consider preparation of a Soils Management Plan (SMP) to support the assessment in the ES to ensure delivery of measures necessary to protect this valuable environmental resource.	part of the EIA of the Scheme and submitted with the DCO application. If identified as required by the assessment, an outline Soils Management Plan (SMP) is likely to be required as part of the EMP to ensure delivery of measures necessary to protect valuable soil resources.
Operational phase mitigation	4.5.12	The ES should include any permanent mitigation and environmental enhancement measures that will be incorporated into the design of the Proposed Development. These should be detailed within the ES, along with an explanation as to how such measures are to be secured.	Section 9.7 of the Geology and Soils chapter of the PEI Report includes design, mitigation and enhancement measures to be incorporated into the Scheme design and implemented during the Scheme construction phase.
Operational waste	4.6.1	The Inspectorate agrees that an assessment of waste produced during operation can be scoped out due to the material use and waste arising from maintenance activities being expected to be generally the same (in both type and quantity) to that generated by the existing road network, and the wastes will be managed using established procedures and facilities that are used across the county and region.	This has been scoped out of the EIA.

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Manufacturing of construction materials	4.6.2	The Inspectorate agrees that this matter can be scoped out as the sites where products and materials are produced will have their own waste management plans and will be out of control of the Applicant.	This has been scoped out of the EIA.
Waste management	4.6.3	The Inspectorate agrees that this matter can be scoped out as these facilities will be operating under the relevant planning and permitting authorisations and will therefore have been subject to site specific assessments.	This has been scoped out of the EIA.
Mitigation Measures	4.6.4	The Scoping Report states that mitigation measures will be included within a CEMP/OEMP, the ES should explain who will be responsible for implementing the mitigation measures and how the final CEMP will be secured.	A first iteration Environmental Management Plan (EMP) will be prepared as part of the ES and submitted with the DCO application and secured through the DCO. Roles and responsibilities will be identified as part of the EMP and DCO.
Waste types	4.6.5	It is noted that the types and volumes of waste is not yet known. The ES should specify this information in the assessment. Appropriate cross-referencing to the Geology and Soils aspect chapter should be included, noting the potential	The Material Assets and Waste chapter of the ES will include information on the types and quantities of waste that are expected to arise from construction of the Scheme and an assessment of effects and significance.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		for contaminated land within the vicinity of the Proposed Development.	Appropriate cross-referencing to the Geology and Soils chapter of the ES will be included.
Operational vibration effects	4.7.1	The Inspectorate agrees that significant vibration effects during operation are unlikely to arise and this matter can be scoped out of the ES.	This has been scoped out of the EIA.
Cross references to other aspect chapters	4.7.2	The ES must ensure that impacts from noise are assessed and reported appropriately for all relevant aspects, with the use of cross referencing where necessary.	Impacts from noise and vibration will be considered in the Population and Human Health chapter, Cultural Heritage chapter and the Biodiversity chapter of the ES. References to the applicable sections of the Noise and Vibration chapter will be made in each case as appropriate.
Study Area	4.7.3	The ES should include a plan which depicts the study area for the construction and operational assessments and should also show the study area for the Affected Road Network, including haul roads and location of construction compounds.	Figures depicting these study areas will be included in the ES.
Piling locations	4.7.4	The ES should explain where piling is likely to be required, this may be supported by figure(s), where appropriate.	Noted. Expected locations for piling will be presented in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Receptors	4.7.5	The ES should assess impacts from vibration during the construction phase on ecological receptors, including aquatic receptors.	Noted. Expected vibration impacts will be discussed with the ecologists and any impacts on ecological receptors, including aquatic receptors, reported in the Biodiversity ES chapter with reference to the Noise and Vibration ES chapter.
Mitigation measures	4.7.6	The assumed effectiveness of noise barriers should be explained within the assessment and factored into noise modelling. Any inter-relationships with other chapters such as the landscape and visual assessment or ecological assessment should also be considered.	Noise barriers will be considered in this manner in the ES and their impact on other disciplines, including inter-relationships, will be discussed in those chapters, with reference to the Noise and Vibration chapter as appropriate.
Significant effects	4.7.7	The ES should report the location of all receptors which will experience adverse effects from noise during operation. Reasoning as to why mitigation measures are unable to prevent significant adverse effects on these two properties should be explained.	The ES will report all adverse effects, not just for those predicted to qualify for insulation. A provisional NIR assessment will be carried out as part of the ES and the full NIR assessment will be carried out within the first 6 months of the Scheme opening, with an 'as built' Scheme design. In addition, and separately to this, reasoning as to why mitigation measures are unable to prevent significant adverse effects will be provided with respect to all noise sensitive receptors expected to experience significant adverse

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			effects, irrespective of their qualification for insulation.
Diversion routes	4.7.8	The ES should describe any diversion routes which would be required during construction, and to aid the readers understanding, include a map/ figure of the potential diversion routes.	Potential diversion routes will be described, and maps provided in the ES if required.
Working hours	4.7.9	The ES should contain details regarding working hours, and any planned night time working. The Applicant should discuss and agree with the LPA whether night-time noise limits are required. It should be clear in the ES how such limits would be secured and implemented, whether through the DCO or other means.	Working hours would be specified within the DCO and set out within the ES and the EMP. The methodology for assessing the impact of night-time noise from construction, and the approach to be taken in dealing with temporary adverse impacts from construction, will be discussed with the LPA and reported in the ES.
Not applicable	4.8.1	No matters have been proposed to be scoped out of the assessment	Noted.
Study Area	4.8.2	The ES should clearly explain and justify the study areas shown for each type of resource which is being assessed and be depicted on a plan. The study area should also include resources which are located near to construction	This will be included in the ES.

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		compounds and transport routes which are to be used during construction.	
Severance Issues	4.8.3	The ES should assess the impacts during construction and operation of potential severance issues for farmers and other landowners. Measures should be included within the DCO to ensure farmers and other landowners ability to access and move their livestock and ability to access their land is not hindered. The ES should assess severance issues as a result of the Proposed Development on the function of local settlements and their ability to act as cohesive communities.	An assessment of severance issues will be included in the ES and relevant measures included in the DCO as required.
Farm Survey	4.8.4	The Scoping Report identifies five farm businesses and other land used for farming which would be crossed by the Proposed Development. No information is provided regarding the total area of land take or the impact on the future operations of each farm business. This information should be included within the ES.	This information will be included in the ES.
PRoW	4.8.5	The effects of any permanent or temporary diversions to PRoW or routes used by walkers,	This will be reported in the ES.

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		cyclists and horse-riders, should be assessed and reported in the ES. Details should be included as to the duration and proposed length of any diversion routes.	
Surveys	4.8.6	Details of the methodology, location and timespan of the proposed Walkers, Cyclists and Horse Riders Assessment and Review (WCHAR) surveys should be included within the ES.	This will be reported in the ES.
Mitigation and enhancement	4.8.7	The ES should explain and justify mitigation measures which will be used to reduce adverse effects and how they will be secured. The Scoping Report states that there are opportunities to improve provision for walkers, cyclists and horse riders. Opportunities should be explained fully in the ES and include how such enhancements would be secured.	This will be reported in the ES.
Reliance upon other Assessments	4.8.8	The ES should explain, using cross reference where necessary which parts of other assessments have been used to identify likely significant effects on population and human health.	This will be explained in the ES and cross-referenced where necessary.

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Impacts from light	4.8.9	The ES should include an assessment of the impacts which new lighting from a dual carriageway road will have upon human receptors. This should include lighting from lighting columns and from vehicle headlights.	A qualitative lighting assessment will be provided in the ES as part of the Landscape and Visual ES chapter.
Reservoir flood risk	4.9.1	The Scoping Reports states that no reservoir flood risk is shown in the study area outside of the River Arun channel as indicated by the Environment Agency (EA) flood maps and it is therefore proposed that this can be scoped out from further assessment in the EIA. The Planning Inspectorate agree that this matter can be scoped out on this basis.	Reservoir flooding has been scoped out of the EIA and Flood Risk Assessment (FRA).
Pond features	4.9.2	Several pond features are located in the study area and are likely to have hydraulic connectivity to the underlying aquifer or are connected to the River Arun floodplain drains and watercourses. The ES should identify these pond features, supported by figures as necessary. The ES should assess how any hydraulic connectivity from these ponds may affect the aquifer or watercourses, should a significant effect from the Proposed Development be identified, such as surface water run-off. Any assessment of water	All pond features are being considered for hydraulic connectivity to the Scheme via surface water and groundwater impact pathways to the Scheme and will be fully assessed in the ES for quantity and quality impacts where a hydraulic pathway is present. The need for replacement ponds lost to the Scheme will also be considered and cross-referenced to the Biodiversity assessment reported in the ES.

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		<p>quality should also include these ponds, and this should be cross-referenced to the ES chapter considering biodiversity.</p>	
<p>Aquifers and Source Protection Zones (SPZs)</p>	<p>4.9.3</p>	<p>As highlighted under the Geology and Soils section above, the Scoping Report suggests that piling for the structure across the River Arun floodplain may reach the chalk bedrock geology, including the Culver Chalk Formation. Piling risk assessments and piling methods to minimise ground disturbance and creation of preferential pathways are proposed. As the Chalk Formations are classified by the EA as a Principal Aquifer, and the Lambeth Group as a Secondary A aquifer the Applicant should assess the likely effects of piling and any other works which may affect the aquifers, in consultation with the EA.</p> <p>The presence of the SPZs and a number of other licenced abstractions in the study area shows that groundwater within the vicinity of the Proposed Development will need to be protected and the</p>	<p>All impact pathways to groundwater through below ground works and potential for runoff infiltration are being identified and will be assessed in the ES where an impact pathway is present. Discussions have begun with the Environment Agency over the need for piling and other groundwater impact risk assessments (such as foundation and drainage risk assessments) associated with cuttings and the necessary mitigation required to protect groundwater resources; this will be described in the ES. The approach will be fully agreed when the piling requirements and cutting depths are confirmed by geologists and groundwater level information has been obtained from the ongoing Ground Investigation. Full cross-</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>ES will need to demonstrate that the effects of piling and any other construction or operational impacts will not be a risk to water quality. The ES should also describe in detail any necessary mitigation, in consultation with the EA, and other relevant consultation bodies, in order to protect vulnerable groundwater resources. The potential for contamination of surface water and groundwater through runoff from the roads and any hard standings (e.g. through fuel and oil spillages) or potential disturbance of soil or land that may be contaminated should be addressed in the assessment of likely effects during construction and operation on water quality from the Proposed Development. The assessment should be based on relevant Foundations and Drainage Risk Assessments as advised by the EA. The ES should describe any necessary mitigation, in consultation with the EA and other consultation bodies. The assessment should cross refer to the Geology and Soils chapter in the ES.</p>	<p>reference to the Geology and Soils ES chapter will be provided in the Road Drainage and Water Environment ES chapter.</p>
Flood storage compensation	4.9.4	Any areas which are proposed for flood storage compensation, where levels are raised or structures introduced into the floodplain, should	The need for flood compensation for structures in the floodplain has been identified through preliminary hydraulic modelling and

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		be identified in the ES following consultation with the EA.	ongoing discussions with the Environment Agency. Further modelling is to be undertaken as the Scheme design develops to ensure flood compensation solutions are adequately designed to provide the required flood mitigation. A full assessment of the efficacy of the compensation and other mitigation measures will be undertaken and reported within the Flood Risk Assessment (FRA) and ES.
Decommissioning	4.10.1	The Planning Inspectorate agrees that this matter can be scoped out from the EIA based on the nature of the Proposed Development and its proposed operational lifespan but reasons for this should be clearly set out in the final ES.	Noted. The ES climate chapter will summarise which lifecycle stages have been scoped in/out and why.
Greenhouse Gas (GHG) emissions – end of life stage	4.10.2	The Planning Inspectorate agrees that this matter can be scoped out from the EIA based on the nature of the Proposed Development and its proposed operational lifespan but reasons for this should be clearly set out in the final ES.	The ES climate chapter will summarise which lifecycle stages have been scoped in/out and why.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Climatic parameters for assessment of vulnerability - wind	4.10.3	The Scoping Report states that impacts of wind on receptors in the surrounding environment are likely to be no worse relative to baseline conditions, based on UKCP18 advice. The Planning Inspectorate agrees that this matter can be scoped out on this basis.	This has been scoped out of the EIA.
Climate Change Vulnerability Review	4.10.4	The Scoping Report states that the review will “captures all assets, infrastructure and users associated with the proposed scheme, including all temporary works”. The ES should explain exactly what/whom the assets; infrastructure and users are which are referred to.	This will be set out in the ES climate chapter.
Flood risk – climate change allowances for peak river flow	4.10.5	Updated climate change allowances for peak river flow in 2021 based on UKCP18 projections should be used to inform the Flood Risk Assessment (FRA) in support of the assessment of effects of flood risk from the Proposed Development, in consultation with the EA.	In July 2021, the EA published guidance for climate change allowances to apply to peak river flow, peak rainfall intensity and sea level rise taking account of research completed using the UKCP18 projections. These allowances have been used in the preliminary hydraulic modelling used to assess the Scheme impact on fluvial and tidal flood risk and to define climate resilient mitigation requirements as well as the development of the drainage strategy and design. The modelling has been undertaken iteratively to

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			guide design to reduce the risk of adverse impacts accounting for climate change and to develop suitable mitigation where required. The process has been undertaken in consultation with the Environment Agency and will be described and reported in the FRA.
Measures to reduce GHG emissions	4.10.6	Any measures applied to reduce GHG emissions should be clearly set out in the ES and how these would be secured through the DCO process should be clearly explained.	Recommended GHG mitigation measures will be set out in the ES, which explain how these will be secured through the DCO process.
UK Sixth Carbon Budget	4.10.7	The UK's sixth carbon budget should be referred to in the ES where appropriate in the assessment of the significance of effects made by comparing estimated GHG emissions arising from the Proposed Development with UK carbon budgets, and the associated reduction targets.	The sixth carbon budget had not been adopted when the EIA Scoping Report was produced. The ES will reflect the latest information on carbon budgets.
Professional judgement	4.10.8	Where professional judgement is used in the assessment this should be made clear in the ES and the professional expertise and relative qualifications of the assessors should be cited.	This will be included in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
n/a	4.11.1	No matters are proposed to be scoped out of the assessment	Noted.
Study Area	4.11.2	The ES should set out and justify the geographical extent of the Zone of Influence and how this has been used to identify other plans or projects on an aspect specific basis to derive the long and short lists of projects.	Noted, the cumulative study areas/zones of influence will be detailed in the ES.
<b>Arun District Council</b>			
Flood Risk and Drainage	N/A	Ideally, the run-off should be subject to the same hierarchy that we deal with surface water on normal developments – i.e. first infiltrate, followed by controlled discharge to watercourse and then controlled discharge to a sewer/drain. I assume that Highways England will have guidelines for storm intensity etc. to be dealt with in highway situations, so our current guide of 100 year + 40% climate change may not be applicable but this should be taken as a starting point for assessing allowable discharges.	40% climate change adjustment is being used for the drainage design and Sustainable Drainage Systems (SuDS) are being proposed in line with LLFA and Arun District Council guidance, using the appropriate hierarchy.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Biodiversity and Habitats	N/A	Designated national and local habitats, rare species (Bats) and the broader Biodiversity Opportunity Areas and Pagham Harbour SPA and Arun Valley SPA/SAC.	<p>An HRA screening assessment has been undertaken which has considered the likely significant effects on seven European sites including the Arun Valley SPA/SAC, Singleton and Cocking Tunnels SAC, the Mens SAC and Ebernoe Common (designated for bat populations) and the Solent and Dorset Coast SPA which includes Pagham Harbour SPA.</p> <p>Field surveys have been undertaken for protected species including bats, dormice and great crested newt, to obtain contemporary data to allow an assessment of potential impacts on these species and formulate mitigation.</p>
Flood Risk and Drainage	N/A	Dealing with surface water run-off should be dealt with as local to the point of impact as possible – translocation of water to adjacent rife and stream catchments may have an effect on water chemistry of the receiving watercourse.	An outline drainage strategy has been developed and discussed with Arun District Council and the Lead Local Flood Authority (LLFA) setting out the proposal to attenuate surface water from catchments with minimal cross-catchment transfer of water. The outline drainage strategy will be developed in full for the DCO and assessed as part of the Flood Risk Assessment (FRA) and EIA and reported in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Flood Risk and Drainage	N/A	<p>Works to watercourses will require either Consent (from Arun having delegation from WSCC as LLFA) or an Activity Permit (from the EA if the watercourse is designated Main River). Criteria for these ‘permissions’ should be ascertained from the relevant authorities.</p> <p>Suitable treatment of run-off prior to discharge is essential if downstream pollution is to be avoided. Retention / detention ponds should be designed to be safe and sufficient.</p> <p>Long-term borehole monitoring is essential if an understanding of groundwater in the area is to be fully understood and accounted for.</p> <p>There are series of limestone solution features (dolines) in the Fontwell area – these should be identified and assessed for how the new road might impact upon them (or vice versa).</p> <p>Road proposals should complement efforts of flood risk reduction in the short, medium and long term. The overall impacts of the choice between embankment or viaduct for the river crossing should take account of tidal, fluvial and pluvial risk</p>	<p>The requirements for any works to watercourses have considered permitting requirements for main rivers and land drainage consent for ordinary watercourses and this has influenced the design of the scheme in relation to interactions with watercourses such as crossings and works within Land Drainage Act bye-law distances. Highways England Water Risk Assessment Tool (HEWRAT) and other DMRB guidance is being used to assess drainage water quality impacts and to size and design surface water attenuation accordingly to manage risk.</p> <p>The geological and hydrogeological conditions have been considered as part of the scheme design and impact assessment. Piezometers (groundwater monitoring) to monitor groundwater have been installed as part of the Ground Investigation (GI) with some to be retained for long term monitoring and will be used in the impact assessment and ongoing design. The GI outcomes will be used to identify any potential impact on groundwater and geology in the Fontwell area.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>(and in combination).</p> <p>Network Rail and Littlehampton Harbour Board must be consulted. The former in respect of the rail crossing and the latter for underbridge clearances etc as the river is within Harbour limits up to the Queen Street bridge in Arundel.</p>	<p>The selection of a viaduct crossing for the Arun floodplain has considered all sources of flood risk.</p> <p>Both Network Rail and Littlehampton Harbour Board have been consulted and dialogue is ongoing.</p>
Rampion Windfarm	N/A	<p>We are aware that the cabling from the proposed Rampion Windfarm extension will cross the new road before its connection point with the National Grid at Bolney. It would be sensible for the promoting authorities to liaise and agree mutual arrangements re ducting provision etc.</p>	<p>As describe in Chapter 15: Cumulative and in-combination effects of the PEI Report, the Rampion Windfarm development is being considered as a cumulative development for the Scheme.</p>
General	N/A	<p>Sustainable construction and sourcing and transport of materials.</p>	<p>Recommended GHG mitigation measures will be set out in the ES.</p>
Flood Risk and Drainage	N/A	<p>The scheme should take account of the influence(s) that the new road, its corridor and construction impacts would have on groundwater – particularly but not exclusively, in terms of existing flow paths.</p>	<p>All impact pathways to groundwater through below ground works and potential for runoff infiltration are being identified and will be assessed where an impact pathway is present. Discussions are taking place with the Environment Agency over the need for piling and other groundwater impact risk assessments associated with cuttings.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Flood Risk and Drainage	N/A	There is a general line of springs along the existing A27 route.	Spring features have been identified and will be assessed as part of the EIA and reported in the ES.
South Downs National Park	N/A	Arun will be looking for assurances from the scoping report to address sensitivity of the South Downs National Park as well as its setting - light (night skies), noise and vibration pollution as well as dust, emissions and air quality, carbon reduction and modal shift and renewable energy sources.	<p>The Landscape and Visual chapter of the PEI Report and ES will address any potential landscape and visual impacts on the SDNP, noting its importance as an internationally designated dark skies reserve. Viewpoint selection takes into account the SDNP Authority View Characterisation and Analysis report and a local stargazing hotspot for night-time survey.</p> <p>Relevant sensitive receptors identified within the study area for air quality and noise that are within the South Downs National Park, will be considered with respect to potential impacts on dust, emissions and air quality in the ES chapter.</p>
Heritage and Conservation	N/A	Would be looking for the report to address impact on setting of CA, listed buildings and on ancient monuments and archaeology, non-designated assets and impact on the setting of Arundel.	The assessment will consider impacts on all designated and non-designated heritage assets within a defined study area, as set out in the EIA Scoping Report and agreed with statutory parties. This will include

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			consideration of impacts on the setting of Arundel.
Flood Risk and Drainage	N/A	Diverting flows (in aquifers or watercourses) may impact existing watercourses and any restriction of flow (damming) could increase flood risk on the upstream side and depletion of flow on the downstream (effects on abstraction points).	The developing design of the Scheme has taken account of the need to maintain watercourse alignments and surface water drainage patterns within existing catchments and alterations to watercourse alignments have been minimised. All impact pathways to groundwater through below ground aspects (such as cuttings) are to be identified using information obtained from the ongoing Ground Investigation and will be used to develop suitable mitigation where groundwater flows have the potential to be impacted, to ensure surface water features connected to aquifers are not affected, and abstractions from groundwater are maintained.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Ancient woodland	N/A	Arun will be looking for assurances from the scoping report to address habitat protection particularly any interface with Ancient woodland. Appreciation of the legacy of any physical attributes i.e. Trees/ancient hedgerows.	The ES will address habitat protection with input from Biodiversity and Arboricultural specialists. The Scheme does not pass through any areas designated as Ancient Woodland and where Ancient Woodland is in close proximity this will be dealt with appropriately to minimise and mitigate any potential impacts.
Arun's evolving landscape	N/A	Arun will be looking for assurances from the scoping report to address the effect of the proposals on Arun's evolving landscape and the interface with planned and known upcoming development in this area.	The ES will take into account the future baseline of the landscape, including the emerging development at Avisford Grange on the northern edge of the settlement of Walberton.
Mitigation for landscape/habitat loss	N/A	Arun will be looking for assurances from the scoping report to address mitigation for landscape/habitat loss. Net gain or betterment in the proposed scheme. Unavoidable tree loss to be addressed with new planting which over time will be required to improve the diversity and resilience of the local tree population, considering climate change and new and emerging threats from pests and diseases impacting our trees. The opportunity to introduce genetic diversity within	The Landscape and Visual PEI Report chapter addresses the importance of landscape mitigation, which will be described in detail and specifications given within the ES and Landscape and Environment Masterplan. This will include working with Biodiversity specialists to consider biodiversity net gain and consider climate change adaptation and disease resilience in the selection of species and habitat creation.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		the mitigation plans, which may help to increase climate resilience in the long term.	
Visual Impact	N/A	Arun will be looking for assurances from the scoping report to address in particular visual impact to the wider surrounds, landform and visual character. Impact on the SDNP to the north and impact on local areas of special landscape character. Impact on existing settlements and the necessary mitigation, to also include visual impact of mitigation associated with any noise barriers deemed to be required.	The Landscape and Visual PEI Report chapter and ES will address potential landscape and visual impacts arising from all proposed features. This will include consideration of effects on the SDNP and local residential receptors. Initial viewpoint locations have been selected in consultation with key stakeholders and will be refined through further consultation and fieldwork. The PEI Report notes that the closest Area of Special Character is located 1.7km to the south-west of the Scheme. The visual impact of mitigation associated with noise barriers will also be considered.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Flood risk and drainage	N/A	There are source protection zones along the route which would need to be accounted for and measures taken to avoid contamination or fluctuation of resource availability.	The Scheme alignment avoids unconfined Source Protection Zones (SPZ) and has no below ground construction or permanent below ground features in either confined or unconfined SPZs. Drainage close to SPZs will be managed via surface water discharge.
Landscape and visual impacts	N/A	Arun will be looking for assurances from the scoping report to address landscape creation, habitat replacement, landscape severance and connectivity across the A27 to be considered and addressed within the scheme's mitigation proposals.	These issues are referred to within the Landscape and Visual PEI Report chapter and the ES will address them in detail. For example translocation of existing vegetation and new planting on proposed green bridges will tackle landscape severance issues.
Population and human health	N/A	Rights of way, severance of communities and access for Non-Motorised Users, disability (all users) and wildlife and Green Infrastructure networks/corridors.	These will be discussed and assessed in the ES, as appropriate.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
<b>Environment Agency</b>			
Flood risk	Page 4/5	In accordance with the NPPF and NPSNN, it would need to be demonstrated that the scheme, both during construction and operation, will not increase flood risk elsewhere.	A Flood Risk Assessment (FRA) is being undertaken iteratively for the design of the Scheme (construction and permanent) to guide design requirements to reduce flood risk impacts and ensure no adverse flood risk effects on third party receptors. The process will be reported via a full FRA accompanying the DCO and which will inform the EIA and mitigation developed.
Baseline model	Page 4	Please note that the updated baseline model must be 'signed off' by the Environment Agency before post-development runs are submitted.	A programme of model development and approval has been discussed and agreed with the EA. This process has been completed for the Binsted and Tortington Rife and is ongoing for River Arun representation.
Coastal saltmarsh	Page 2/3	We would have expected 'coastal saltmarsh' to have been classified as 'National' importance in the table given that saltmarsh is regarded as an Irreplaceable Habitat in the Annex 2 Glossary to the NPPF (along with ancient woodland and veteran trees which are cited as National importance in this table).	A review of survey data will be undertaken to assess if the areas of coastal grazing marsh shown on the Habitat Inventory Map do qualify as coastal and floodplain grazing marsh. These grasslands will be assigned the appropriate level of importance with

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			justification provided where importance is not considered to be National.
Piling for the structure across the River Arun floodplain	Page 4	<p>We would require a Foundations Risk Assessment to ensure that any piling carried out in any part of this scheme does not risk mobilising contamination and acting as a pathway for it to enter groundwater.</p> <p>In addition, a robust discovery strategy will be required for any previously unknown contamination identified during the construction of the scheme.</p>	<p>All impact pathways to groundwater through below ground works and potential for runoff infiltration are being identified and will be assessed where an impact pathway is present. Discussions have begun with the EA over the need for piling and other groundwater impact risk assessments associated with cuttings. The approach will be fully agreed when the piling requirements and cutting depths are confirmed by geologists and groundwater level information obtained from the ongoing Ground Investigation. Full cross-reference to the Geology and Soils ES Chapter will be provided in the Road Drainage and Water Environment ES Chapter.</p> <p>A strategy for managing any previously unknown contamination identified during the construction of the scheme will be included as</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			part of the EMP and will be in accordance with the requirements of the Environment Agency's LCRM guidance (2020).
Visual receptors	Page 2	We would suggest that anglers should be included as a visual receptor group under Recreational Users.	Anglers are included as a visual receptor group in the Landscape and Visual PEI Report chapter and will be included as such also within the ES.
Culverting of watercourses	Page 5	Please note that the Environment Agency is opposed to the culverting of watercourses because of the adverse ecological, flood risk, geomorphological, human safety and aesthetic impacts caused.	Culverting of watercourses has been avoided wherever possible and all main rivers will be crossed via underbridge structures. Culverts for ordinary watercourses have largely been avoided and proposed where they are the only option to maintain downstream watercourse connectivity. A full assessment of the impact of watercourse crossings will be reported in the ES and the accompanying Water Framework Directive (WFD) assessment which will identify the required mitigation for any adverse effects.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Sensitive receptor selection	Page 4	Fish and other aquatic organisms should be included as a sensitive receptor.	DMRB LA105 guidance considers designated ecosystem sites that are sensitive to changes in air quality. Water courses are not considered to be sensitive to changes in air quality (as set out in DMRB LA 105) and therefore will not be considered within the air quality assessment for the Scheme. Standard dust suppression techniques will be employed during construction, as set out in the first iteration of the EMP.
Aquatic ecology	Page 2/3	We would recommend that fisheries both within the ditches and the main River Arun are scoped into the Environmental Statement.	Fish will be included as an ecological feature within the ES and an assessment will be undertaken of the impact of the Scheme on fish.
Water voles	Page 2/3	Mentions that 'ditches .... are known to provide habitat for water vole'. This should more accurately state that water voles are known to exist within the scheme footprint and the local area.	Following survey work, the ES will outline that water vole have been confirmed to be present in the ditches of the River Arun floodplain and also at Binsted Rife and Tortington Rife.
Water pollution	Page 4	We recommend prioritising vegetated drainage systems in early thinking about drainage solutions, maximising the opportunities for	HEWRAT and other DMRB guidance is being used to assess drainage water quality impacts and size and design surface water attenuation accordingly to manage risk.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		multiple benefits for surface water management, pollution prevention, biodiversity, and landscape.	LLFA guidance on SuDS preference and hierarchy is being used in the design of the Scheme drainage system and attenuation features.
Flood Zone 3b	Page 5	The site also covers Flood Zone 3b (functional floodplain). The NPPF and associated Practice Guidance makes it clear that essential infrastructure located within Flood Zone 3b must: remain operational and safe for users in times of flood; result in no net loss of floodplain storage; not impede water flows and not increase flood risk elsewhere.	Hydraulic modelling is being used to ensure that the Scheme remains operational in the design event (tidal and fluvial) with climate change allowance considered. The modelling is being used to identify and design flood compensation for loss of floodplain storage to ensure no net loss of floodplain and ensure there is no adverse increase in flood risk to third party receptors.
Flood storage compensation	Page 5	Flood storage compensation must be provided where levels are raised or structures introduced into the floodplain. Drawings and calculations should be 'signed off' by the Environment Agency. One of the key operational mitigations should be to design the scheme to minimise the amount of flood plain compensation required. This does not appear as one of the suggested mitigations. We would like to see full	Hydraulic modelling is being used to ensure that the Scheme remains operational in the design event (tidal and fluvial) with climate change allowance considered. The modelling is being used to identify and design flood compensation for loss of floodplain storage to ensure no net loss of floodplain and ensure there is no adverse increase in flood risk to third party receptors. The modelling is being progressed and discussed with the EA.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		consideration of detailed design options that minimise land take within the floodplain.	The modelling has been used to minimise the extent of permanent built structures within the Arun floodplain as far as practicable to reduce impacts on flood conveyance and reduce the volume of floodplain compensation required. This will be explained further in the ES.
Fish	Page 4	Fish are sensitive to vibration impacts from construction activities (such as piling) and we could not see them identified as a sensitive receptor in this chapter (nor elsewhere in the document). Page 147 in this chapter references human receptors and impact on building structures only. Furthermore, the whole chapter does not consider noise and vibration impacts on wider ecological receptors in the river corridor. We therefore suggest that this needs to be scoped into the EIA process.	Noise and Vibration impacts on ecological receptors (including fish) will be considered in the Biodiversity ES chapter, with reference to the Noise and Vibration ES chapter, and support from the Noise and Vibration specialists, as required.
Groundwater level and quality monitoring	Page 5	We support the proposals in Section 14.4.24 (Page 176) for groundwater level and quality monitoring to be undertaken to support the wider ground investigations. Shallow groundwater is likely in several parts of this scheme and if	Noted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		dewatering is necessary a permit may be required.	
Ecological enhancements	Page 2/3	Ecological enhancements are improvements over and above impact avoidance and mitigation and this needs to be reflected in the Environmental Statement. It should also include future site management of retained and created habitats, for the benefit of wildlife, and details of proposed post-development management and monitoring.	Opportunities for biodiversity enhancement will be sought alongside other mitigation measures incorporated into the Scheme design. These will be described within the ES.
River Arun	Page 2/3	Consideration needs to be given to what fisheries information is available for the main River Arun (given the above comments) and whether further survey information is required.	Surveys using eDNA have been undertaken to identify fish species present within the River Arun.
Groundwater	Page 3 & 4	Shallow groundwater is present across a large part of the scheme and so groundwater is very sensitive to contamination and needs to be protected. The scheme crosses a number of areas where current or historic land uses pose a risk of legacy ground contamination including historic landfills.	The assessment of potential contaminated land reported in the ES will consider all applicable receptors including groundwater.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Source Protection Zones	Page 3 & 4	The proposed scheme does not pass through any Source Protection Zones (SPZs), however the western section, where it joins the exiting A27, is close to the SPZ for Fontwell. Section 10.4.21 states that groundwater receptors are identified as secondary A and secondary (undifferentiated) aquifers. We would like to highlight the potential for these deposits to be in hydraulic continuity with the underlying chalk in some areas of the proposed scheme.	The Conceptual Site Models (CSM) that will be developed as part of the contaminated land assessment reported within the ES Geology and Soils chapter will consider the potential for hydraulic continuity to exist between aquifer units.
Flood Risk Assessment	Page 6	Any final design and Flood Risk Assessment will need to take into account the uncertainties regarding flood risk over the lifetime of the infrastructure. We are awaiting updated climate change allowances for peak river flow in 2021 based on UKCP18 projections. We would expect these allowances to be considered ahead of the submission of post-development designs. Sea level rise allowances were updated in December 2019 based on UKCP18. There are no planned updates to these allowances. This includes the standard of flood risk infrastructure on the Arun over the next 100 years. Therefore, we recommend that you consider the impacts of climate change and the implications of an	The EA have published guidance for climate change allowances to apply to peak river flow, peak rainfall intensity and sea level rise taking account of research completed using the UKCP18 projections. These allowances have been used in the hydraulic modelling used to assess the Scheme impact on fluvial and tidal flood risk and to define climate resilient mitigation requirements as well as the development of the drainage strategy and design. The modelling has been undertaken iteratively to guide design to reduce the risk of adverse impacts accounting for climate change and to develop suitable mitigation where required. The process will be

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		undefended scenario in considering the options, including any high level assessment on flood risks.	described and reported in the FRA.  In discussion with the EA, hydraulic modelling, Scheme design and mitigation need has considered both the defended and undefended scenario.
Fisheries	Page 2/3	Consideration of River Arun Fisheries, with reference to noise/vibration	The ES will report on the assessment of construction impacts such as noise and vibration on fish present within the River Arun. It will detail additional mitigation or compensation measures to address any predicted significant adverse effects.
Construction activity impacts	Page 2/3	There is no reference in here to the indirect impacts of construction activity on biodiversity such as construction noise, vibration and construction dust. There is the potential for vibration to impact fisheries during construction which has not been identified.	The ES will report on the assessment of construction impacts such as noise, vibration and construction dust on habitats and species (including fish). . It will detail additional mitigation or compensation measures to address any predicted significant adverse effects.
The surface geology	Page 5	The Environment Agency will only agree to the use of deep infiltration system for surface water or sewage effluent disposal if the developer can show that all of the following apply:	The outline drainage strategy has identified that discharge of attenuated road runoff to ground will be limited to where this already occurs for the existing A27 and no new deep

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>The discharge to groundwater is indirect (with the exception of clean uncontaminated roof water to ground).</p> <p>There are no other feasible disposal options such as shallow infiltration systems or drainage fields/mounds that can be operated in accordance with the appropriate current British Standard 6297:2007+A1:2008.</p> <p>The system is no deeper than required to achieve sufficient soakage.</p> <p>Acceptable pollution control measures are in place.</p> <p>Risk assessment demonstrates that no unacceptable discharge to groundwater will take place – in particular inputs of hazardous substances to groundwater will be prevented.</p> <p>There are sufficient mitigating factors or measures to compensate for the increased risk arising from the use of deep structures.</p>	<p>bore soakaways are currently proposed. Appropriate risk assessments will be completed where existing infiltration measures are to be used and this will be reported in the ES.</p>
A Drainage Risk Assessment	Page 5	A Drainage Risk Assessment will be required to demonstrate that the risk of contaminants entering groundwater have been mitigated against.	The outline drainage strategy has identified that discharge of attenuated road runoff to ground will be limited to where this already occurs for the existing A27. Appropriate risk assessments will be completed where

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			necessary and mitigation developed and this will be reported in the ES.
Green Bridges	Page 2/3	It is important that the scheme is designed to ensure connectivity of habitat for terrestrial species, and the location and design of Green Bridges needs careful consideration.	The Scheme has been designed to provide connectivity along the Scheme, east to west and also across the Scheme, north to south with the inclusion of two green bridges, two underpasses at Tortington and Binsted Rife and a viaduct across the River Arun and floodplain. Bat survey data from between 2017 and 2021 has been used to identify key areas of bat activity that may be impacted by the Scheme and to inform the most suitable location for green bridges.
General	Page 1	We would suggest that one of the scheme objectives should be relating to flood risk, i.e., to ensure that the scheme will be safe for its lifetime without increasing flood risk elsewhere and where possible reducing flood risk overall.	This is being considered in the Flood Risk Assessment (FRA) and the drainage design for the Scheme will be designed with this in mind.
Population and human health	Page 4	Anglers should be included under the Land Use and Accessibility bullet and impact upon anglers	This will be reported in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		and this recreational pursuit considered in subsequent sections.	
<b>Forestry Commission</b>			
Access improvements	Page 2	Could pedestrian or cycle routes be included along the route in safe way? In particular as the route crosses the Arun valley? Cross routes to allow walkers and cyclists to transit north/south from the coast to the Downs? There appear to be opportunities where the route crosses the 'rifes'.	Access improvements will be reported in the ES and WCHAR.
Resilience / Design	Page 2	Recommend the ES review the history of the local treescape and how it could evolve to reflect that character while being resilient in a changing climate.	Appropriate site-specific species will be selected to accompany the Landscape and Environment Masterplan. This will draw on tree survey data captured for the site and will provide an opportunity to increase the diversity and resilience of the local tree stock.
Minimisation of the loss of trees and woodland	Page 1	Most woodland has been avoided but some relatively new woodland sits on the eastern side of the Binsted Rife close to where the bypass will cross the Rife. In addition hedgerow trees should be avoided if at all possible (though the	Optioneering has taken place to determine the route of the proposed A27, including avoiding existing vegetation (including hedgerow trees) where possible, especially

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		predations of ash die back mean the longer term survival of trees of this species is dubious).	known veteran trees and those areas designated as Ancient Woodland.
Biosecurity / Design	Page 2	Pests and diseases: all your trees should be sourced to minimise the risks of introducing tree pests and disease	Specifications will take biosecurity and the risk of pests and disease into account.
Landscape / Design	Page 2	Tree planting is traditionally carried out alongside new roads. In this case we recommend that consideration goes beyond the road corridor to build on the wider landscape of the national park.	The Order Limits boundary for the DCO application is limited to essential mitigation only. The new planting proposed will take the local landscape context into account, including opportunities for green infrastructure links.
Construction materials	Page 2	Using locally sourced materials during construction of the project would help support local businesses and infrastructure.	These opportunities to use locally sourced materials will be explored by the Contractor prior to construction.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Fragmentation / Design	Page 2	Unviable fields can attract land uses which are less traditional to the local area. Consideration should be given to allocating a function to such sites which is complementary – which might be woodland.	Thought will be given to the re-purposing of land post construction. The majority will return to agricultural use where appropriate and otherwise other opportunities will be sought, including the provision of additional open access land and additional woodland cover to complement the landscape character where appropriate.
Impacts on ecological connections: hedgerows, streams, rifles	Page 1	The incised nature of the ‘rifles’ in this area provide key commuting corridors for local wildlife and options to maintain these corridors is key.	These key corridors will be maintained. Underpasses associated with the crossing of the rifles have been designed to be of such a height that bats can continue to use these areas as a flight line as well as providing crossing points for other species such as badger and dormouse.
Biosecurity	Page 2	Equipment and materials should be managed to ensure pests and diseases are not imported (for instance – all machinery should be clean when it arrives and leaves the site).	Trees will be sourced locally where possible to minimise the risk of introducing pests and disease and biosecurity measures will be in place throughout construction of the Scheme.

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Water Quality	Page 2	<p>The route could impact both existing water flows over and through the area AND run-off from the new carriageway will need to be managed. Woodlands can be designed to act as filters for run-off.</p>	<p>Watercourse alignments have been maintained where practicable and land drainage has been factored into the scheme design to ensure overland surface water flow paths are mitigated.</p> <p>Highways England Water Risk Assessment Tool (HEWRAT) and other DMRB guidance is being used to assess drainage water quality impacts and to size and design surface water attenuation accordingly to manage risk.</p>
<b>Historic England</b>			
Proposed Study Area	N/A	<p>We recommend that a qualitative, holistic and bespoke approach (to the study area) is taken to ensure impact can be comprehensively understood, but in a time-efficient manner.</p> <p>To achieve this, we recommend that you follow the advice given within our guidance (“The setting of Heritage Assets; Historic Environment Good Practice Planning Note 3), which suggests a staged approach in assessing setting. This assessment should be based on the Zone of Theoretical Visibility (ZTV).</p>	<p>Following this comment, the study area has been refined. It has been extended to ensure that assets beyond a set area will be considered. Given the potential for a large number to fall into the study area a qualitative approach will be undertaken, alongside a holistic one following the methodology agreed during subsequent consultation. This takes into consideration the Zone of Theoretical Visibility and includes the consideration of assets by group and theme.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>Given the number of assets, we suggest that these are assessed in thematic groups at this stage. For instance, to assess whether the scheme could harm the significance of groups of assets, such as barrows on the South Downs, listed farmsteads, or churches.</p> <p>This first rapid assessment should lead to a more refined list of assets, which should then be subject to further assessment as set out in our setting guidance.</p> <p>This staged approach should be applied to all heritage assets irrespective of their designation status or grade.</p> <p>It is not clear why some listed buildings within the study area are individually identified, and others are not, such as the many listed buildings within Arundel, Walberton and Slindon and their conservation areas.</p> <p>From the information so far presented, we agree that highly graded assets individually identified such as Arundel Castle, Tortington Priory and</p>	<p>Each individual heritage asset within the study area will be considered within the ES to establish the extent, if any, impact on their significance.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>Barn would need full and careful assessment. We consider that there will likely also be an impact on others which have not been individually listed including Arundel Cathedral and St Mary's Church, Binsted, which would also need full assessment.</p>	
Holistic assessment	N/A	<p>The assessment should include consideration of the effects of noise and pollution on our appreciation of heritage assets, as well as the potential impacts on our understanding of historic relationships between assets and places, which can amplify our understanding of their significance.</p> <p>It is also important to remember that it is not only built heritage that has a setting but that buried archaeology can have a setting.</p> <p>A more integrated and cross-disciplinary approach to the chapters of the Environmental Statement. In particular, the Cultural Heritage and Landscape &amp; Visual Chapters should be thoroughly integrated. The LVIA should scope in heritage assets as sensitive receptors where appropriate.</p>	<p>Historic relationships are a key factor in understanding significance and will be considered within the assessment. This includes both upstanding and below ground assets. The cultural heritage specialists are working closely with the landscape and visual and noise specialists to ensure that all potential effects are considered. It is highlighted in the Landscape and Visual PEI Report chapter that the Sussex Historic Landscape Character Assessment is covered in the Cultural Heritage chapter and the heritage assets, including the proximity to the Church of St Mary's, Binsted have been noted. An appropriate viewpoint has been identified from the location of the Church of St Mary's, Binsted.</p>

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Historic Landscape Character	N/A	It is very concerning that the Scoping Report includes no intention to assess the scheme’s impact upon historic landscape character as part of the Cultural Heritage Chapter (Chapter 7). Nor does the Landscape and Visual Chapter (Chapter 8) include heritage as a consideration within its assessment of landscape significance.	See response to the comment in the row above. An assessment of the historic landscape character will also be included in the DBA to be appended to the ES and impacts to the historic landscape will be considered in the ES. The assessment of landscape and visual impacts is derived from LA 107 published standards.
Integrated Assessment	N/A	The Scoping Report states an intention to adopt a “landscape approach” to assessment in general; to ensure impacts to environmental receptors are understood in an integrated way (4.4.3; 4.4.5). Despite this stated intention, we think that there is poor integration between the different chapters.	Since this comment was received, subsequent consultation has been undertaken which has reinforced the integrated approach that will be taken to the assessment of the historic environment, particularly alongside landscape and visual amenity.
Archaeological Field Assessment	N/A	The DBA should include, or refer to, a geoarchaeological assessment and deposit model informed by appropriate specialist surveys, in order to understand this resource, and ensure it is considered in the design scheme and mitigation (7.8.21 and 22).	The DBA will include a geoarchaeological assessment and refer to a deposit model being developed based on the results of ongoing Ground Investigation works and a programme of geoarchaeological geophysical survey. Deposits of geoarchaeological interest will be adequately assessed and

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			appropriate mitigation will be proposed in the ES.
Holistic assessment	N/A	<p>It is important that the Environmental Assessment assesses the impact of all aspects and phases of the development, including any impacts (negative or positive) that may result from the de-trunking of the existing A27.</p> <p>Assessment should account for all aspects and phases of the development; and comprehensively assess the relative impact of different design options that are still under discussion (notably, embankment versus viaduct).</p>	<p>The ES will consider impacts from all aspects and phases of development of the Scheme on the historic environment, including those resulting from de-trunking the existing A27.</p> <p>Consideration of different design options has taken into account the impact on heritage assets and the Heritage team forms part of the multidisciplinary approach to detailed design. The ES will assess the impact of the preferred design on the heritage assets.</p>
Photomontages	N/A	<p>It is also very important that as part of the second more detailed stage of setting assessment - the applicant demonstrates the visual aspects of setting impact for all of the most affected assets, using verified view photomontages.</p> <p>A comprehensive and qualitative assessment of impact upon historic landscape character is of vital importance for this scheme. Impacts should</p>	<p>The ES will include an assessment of setting and historic landscape character. This will be supported by appropriate viewpoints and photomontages. Consultation will be undertaken with Historic England on the proposed locations.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		be demonstrated using verified view photomontages.	
Archaeological Field Assessment	N/A	<p>We agree that intrusive archaeological investigation is needed - both to evaluate the significance of known archaeological assets; and identify and characterise the site's as-yet unknown potential archaeological resource (7.7.4).</p> <p>Archaeological field assessment should be completed to inform the drafting of the Environmental Statement.</p>	The results of non-intrusive and intrusive archaeological surveys will be presented and assessed in the ES.
Archaeological Field Assessment	N/A	There is a large amount of evaluative fieldwork still remaining to be done, some of which must be carried out in an iterative manner. It is very important that the full results are incorporated into the Environmental Statement; in order to fully understand the impact to the area's important archaeological resource.	The results of non-intrusive and intrusive archaeological surveys will be presented and assessed in the ES.

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Setting of Heritage Assets	N/A	Assessment of impact to setting (and resulting harm to significance of heritage assets) in particular will need to be thorough, qualitative and holistic. It should certainly be the subject of its own Heritage Assessment. A more qualitative and holistic approach of the setting of heritage assets, and the impact upon them by the scheme, is required.	This has been discussed further with the stakeholder and an approach agreed which takes into consideration both the qualitative and holistic approach to assessment.
<b>Horsham District Council</b>			
Air quality and traffic	N/A	It is important that the EIA fully considers air quality and traffic movements through Storrington and the surrounding Horsham District.	As set out in DMRB LA105 guidance, the study area within the air quality assessment will be determined using the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area, including any locations within AQMAs, will be included within the assessment. It is anticipated that the ARN will likely include Storrington and Steyning, which will be confirmed within the ES once traffic impacts have been screened using the aforementioned DMRB LA105 traffic screening criteria.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Health as a result of traffic movements	N/A	Chapter 13 should also take into account the impacts to health as a result of traffic movements in particular through AQMAs such as Storrington.	This will be explained in the ES and cross-referenced where necessary.
<b>Health and Safety Executive</b>			
HSE's consultation distances	N/A	According to HSE's records there are no major accident hazard sites or major accident hazard pipelines within the proposed DCO application boundary of the proposed A27 Arundel Bypass for this Nationally Significant Infrastructure Project.	Noted.
Hazardous Substance Consent	N/A	The presence of hazardous substances on, over or under land at or above set threshold quantities (Controlled Quantities) will probably require Hazardous Substances Consent (HSC) under the Planning (Hazardous Substances) Act 1990 as amended. The substances, alone or when aggregated with others for which HSC is required, and the associated Controlled Quantities, are set out in The Planning (Hazardous Substances) Regulations 2015 as amended. HSC would be required to store or use any of the Named Hazardous Substances or Categories of	The quantities of substances that fall within the scope of the hazardous substances quantities is not yet known. When information is available the need for HSC will be determined.

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		Substances at or above the controlled quantities set out in Schedule 1 of these Regulations.	
Consideration of risk assessments	N/A	Regulation 5(4) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires the assessment of significant effects to include, where relevant, the expected significant effects arising from the proposed development's vulnerability to major accidents.	Noted.
Explosives sites	N/A	HSE has no comment to make as there are no licensed explosives sites in the vicinity.	Noted.
Electrical Safety	N/A	No comment from a planning perspective.	Noted.
<b>Natural England</b>			
Designated sites	Appendix A - SSSI & International Sites	The ES should thoroughly assess the potential for the proposal to affect designated sites. Potential to directly / indirectly impact Arun Valley SPA/SAC/Ramsar, S&C SAC, The Mens SAC, Ebernoe Common SAC.	A stage 1 HRA screening assessment has been undertaken to identify if the Scheme will have a likely significant effect (LSE) on the following seven European Sites. <ul style="list-style-type: none"> <li>• Arun Valley Ramsar site</li> </ul>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>European sites fall within the scope of the Conservation of Habitats and Species Regulations 2017 (as amended). In addition paragraph 176 of the National Planning Policy Framework requires that potential Special Protection Areas, possible Special Areas of Conservation, listed or proposed Ramsar sites, and any site identified as being necessary to compensate for adverse impacts on classified, potential or possible SPAs, SACs and Ramsar sites be treated in the same way as classified sites.</p> <p>An appropriate assessment needs to be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site.</p>	<ul style="list-style-type: none"> <li>• Arun Valley Special Area of Conservation (SAC)</li> <li>• Arun Valley Special Protection Area (SPA)</li> <li>• Ebernoe Common SAC</li> <li>• Singleton and Cocking Tunnels SAC</li> <li>• The Mens SAC</li> <li>• Solent and Dorset Coast SPA</li> </ul> <p>The Stage 1 screening assessment has concluded that LSE cannot be ruled out for Singleton and Cocking Tunnels SAC, therefore an appropriate assessment will be undertaken.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Access and Recreation	Appendix - Access and Recreation	Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.	Access improvements will be reported in the ES and in the Walking, cycling and horse riding assessment and review (WCHAR).
Invertebrates	Appendix A - further survey & design	Invertebrates are notably abundant and we advise that additional surveys for invertebrates are required.	Additional surveys for terrestrial and aquatic invertebrate have been undertaken in 2021.
Environmental Net Gain	Appendix A- Environmental Net Gain	NE recommends that the scheme should deliver a net benefit for biodiversity and the wider environment. The ES should fully detail the environmental net gains that will be provided by the applicant.	An integrated approach is being undertaken to develop the Landscape and Environment Masterplan. This includes a Biodiversity Net Gain (BNG) assessment and strategy to inform the development of the Landscape and Environment Masterplan. The BNG assessment will be included within the ES

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Climate Change Adaptation	Appendix - Climate Change Adaptation	<p>The Arundel Bypass introduces a permanent major severance of a highly sensitive landscape habitats such as ancient woodland, and wetlands. We have advised that this will have a major impact on a functioning ecosystem. This severing impact affects the resilience and ability of habitats and species to adapt to climate change.</p> <p>Furthermore, the severance and loss of the floodplain will have impacts regarding flood storage and the functioning of the floodplain. The impact of this must be considered with climate change forecasts.</p>	<p>Appropriate climate change allowances are being used to model the impact of all floodplain interactions to guide Scheme design and structure and required mitigation. Climate change scenarios are being agreed with the EA.</p> <p>Climate change specialists will liaise with the Road Drainage and Water Environment specialists as well as Biodiversity in consideration of these issues.</p>
Classification of habitats	Appendix A- Classification of habitats	<p>It is NE's understanding that a chalk stream is present within the Area of Study and this must be included here. Furthermore, the documents describe Fen Habitat which is not on this list and is also a habitat of principle importance.</p>	<p>Assessment work undertaken to date has identified that:</p> <ul style="list-style-type: none"> <li>- The Tortington Rife shows no characteristics of being a chalk stream.</li> <li>- The Binsted Rife may be more characteristic of a chalk stream further upstream from the study area, but where the Scheme crosses the rife, the watercourse shows no chalk stream characteristics. Therefore, it is considered that a separate assessment for chalk streams is not required in the biodiversity assessment.</li> </ul>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			Surveys undertaken in 2021 have identified areas that may qualify as Lowland Fen Habitat within the scheme boundary, which will be detailed within the ES.
Climate Change Adaptation	Appendix - Climate Change Adaptation	The England Biodiversity Strategy published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be maintained.	Climate change specialists will liaise with Biodiversity specialists on these issues and review the approach from other schemes.
Contribution to local environmental initiatives and priorities	Appendix - Contribution to local environmental initiatives and priorities	A two year project, the Arun Valley Vision, was set up as a community-led partnership project to develop a sustainable long-term vision for the Lower Arun Valley. The outputs and recommendations of the project should be considered with the ES and in particular the preferred approach of adaptive management which recognises the significance of the valley and sets out targeted interventions to increase flood resilience and facilitate adaptation to climate change and sea level rise.	Climate Change specialists will liaise with the Road Drainage and Water Environment specialists in consideration of the outputs and recommendations of the Arun Valley Vision.

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Design, mitigation and enhancement measures	Appendix 8.6. Design, mitigation and enhancement measures	The EIA process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.	Consideration of alternatives and justification for the selected option will be set out in the ES.
Protected Species - Bat	Appendix A - Protected Species	<p>We have highlighted that early and thorough assessment and impacts to bats is particularly important as it is unclear how the required level of confidence in the efficacy of avoidance, mitigation and/or compensation measures can be demonstrated given the clear significance of this area, and the lack of clear evidence to support the effectiveness of such measures.</p> <p>We have advised HE that this presents a significant risk to the viability of the scheme and invited urgent consultation with regard to this matter. To this end we welcome that HE has approached NE for comment on bat surveys and mitigation.</p>	Detailed bat surveys including crossing point surveys and radio tracking surveys have been undertaken in 2021. The survey data has been used to inform mitigation design. Further consultation with Natural England will be undertaken with regards to survey results and mitigation.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Contacts for Local Records	Appendix A- Contacts for Local Records	We recommend that you seek further information from the appropriate bodies (which may include the local records centre, the local wildlife trust, local geoconservation group or other recording society and a local landscape characterisation document).	Ecological records have been obtained from various sources including the local record centre.
Fig 3	Appendix A	<p>This is not clear as it only shows the mid-line of the road, and not the true extent including the working width, this needs to be incorporated to include direct and indirect assessments.</p> <ul style="list-style-type: none"> <li>• Furthermore, key connective habitats such as Lake Copse, The Shaw and The Lag, which are of exceptional importance as bat flight lines and foraging habitats, have not been shown on the map, despite them being immediately adjacent to the area of search. We therefore advise that in order to provide the required landscape- scale of assessment a corridor of the centre line of the road and habitats each side will not be enough.</li> <li>• Additionally, the map has not included floodplain grazing marsh priority habitat.</li> </ul>	Figure 3 shows the Phase 1 habitats recorded within a 100m buffer of the centreline of the Scheme. For the ES, Phase 1 habitat survey data will be provided for all land within the Order Limits (subject to being able to access land for survey). For the ES, consideration will be given to providing the Phase 1 habitat survey map over an aerial image so that the habitats recorded in the survey area can be seen in the context of the wider landscape. Floodplain grazing marsh is not shown on the Phase 1 habitat survey map as this habitat type is not listed within the JNCC, (2010), Handbook for Phase 1 habitat survey.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Fig 4	Appendix A	Although this broadens out the to a 1km area of search, it does not include connecting habitats, hedgerows for example, so does not show the functionality of the habitats within the area of search. Furthermore, the true impact is not accurately reflected as only the centreline of the road is shown.	For the ES, the Order Limits will be included and environmental constraints will be shown and reported from the Order Limits in accordance with the appropriate zone of influence.
Soil and Agricultural Land Quality	Appendix - Soil and Agricultural Land Quality	Impacts from the development should be considered in light of the Government's policy for the protection of the best and most versatile (BMV) agricultural land as set out in paragraph 170 of the NPPF. We also recommend that soils should be considered in the context of the sustainable use of land and the ecosystem services they provide as a natural resource, as also highlighted in paragraph 170 of the NPPF.	In the PEI Report Geology and Soils chapter, agricultural land quality has been reviewed with reference to agricultural land classification (ALC). The agricultural land that would be affected by the construction of the Scheme will be surveyed to determine its ALC grade. The extent and quality of agricultural land lost will be assessed and reported within the ES. The ES and measure that will be detailed in the EMP will demonstrate that sustainable use of land has been considered and that soils are treated as a natural resource requiring measures to protect them.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Co-ordination with other Projects	Appendix A - in-combination & BNG	We would encourage the applicant to work closely with other major projects for example Rampion II to deliver a coherent, landscape scale mitigation and enhancement strategy.	Opportunities to integrate with other projects will be explored as part of the EIA.
Detailed advice on Landscape Assessment	Appendix - Detailed advice on Landscape Assessment	We note 5.12 which states that Ongoing engagement will be undertaken with the SDNP Authority to ensure that the special qualities are considered as part of the PCF Stage 3 design development. As the statutory adviser for Landscape Natural England would also wish to be consulted on this matter.	Natural England will have a chance to comment on the Landscape and Visual PEI Report chapter which details the plan to assess against the SDNP special qualities.  There will be the potential for further stakeholder engagement on aspects such as the assessment of effects on the SDNP if required.
Cumulative and in-combination effects	Appendix - General Principles	It will be important for any assessment to consider the potential cumulative effects of this proposal, including all supporting infrastructure, with other similar proposals and include a thorough assessment of the 'in combination' effects of the proposed development with any existing developments and current applications. A full consideration of the implications of the whole scheme should be included in the ES.	Noted, this will be present within the Cumulative and In-combination Effects ES chapter.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Detailed advice on Landscape Assessment	Appendix - Detailed advice on Landscape Assessment	We would welcome consultation regarding the viewpoints.	Stakeholders will have further chance to comment on viewpoints as detailed in the Landscape and Visual PEI Report chapter.
Design, mitigation and enhancement measures	Appendix A- Design, mitigation and enhancement measures	The area likely to be affected by the proposal should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES.	<p>Surveys have been undertaken between 2017 and 2019 and also in 2020 and 2021. Surveys have followed good practice survey methodologies and have been undertaken at the appropriate time of year and by appropriately experienced/licensed ecologists.</p> <p>The data gathered during surveys is used to inform our assessment of potential impacts on species and habitats and to formulate mitigation. The ES will explain the approach to the provision of essential mitigation for the Scheme.</p>
Design, mitigation and enhancement measures	Appendix A- Design, mitigation and enhancement measures	Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and where necessary, licensed, consultants.	Surveys have been undertaken between 2017 and 2019 and also in 2020 and 2021. Surveys have followed good practice survey methodologies and have been undertaken at the appropriate time of year and by

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			appropriately experienced/licensed ecologists.
Assessment of Severance	Appendix A- Assessment of Severance	<p>Natural England advises that a habitat survey (equivalent to Phase 2) is carried out on the site, in order to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:</p> <ul style="list-style-type: none"> <li>• Any historical data for the site affected by the proposal (e.g. from previous surveys);</li> <li>• Additional surveys carried out as part of this proposal;</li> <li>• The habitats and species present;</li> <li>• The status of these habitats and species (e.g. whether priority species or habitat);</li> <li>• The direct and indirect effects of the development upon those habitats and species;</li> <li>• Full details of any mitigation or compensation that might be required.</li> </ul>	<p>Surveys have been undertaken between 2017 and 2019 and also in 2020 and 2021. Surveys have followed good practice survey methodologies and have been undertaken at the appropriate time of year and by appropriately experienced/licensed ecologists. NVC surveys have been undertaken of suitable areas identified during the Phase 1 Habitat surveys. Ornithological surveys and invertebrate surveys have also been undertaken.</p> <p>The ES will include a summary of survey results with detailed results provided in appendices to the ES.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Landscape and visual impacts	Appendix - Landscape and visual impacts	<p>NE would wish to see details of local landscape character areas mapped at a scale appropriate to the development site as well as any relevant management plans or strategies pertaining to the area.</p> <p>The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development, such as changes in topography.</p> <p>The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies.</p>	<p>The Landscape and Visual PEI Report chapter gives details of the local landscape character areas, which will be further assessed within the ES. A local landscape character area report will provide further detail in the ES.</p> <p>The local landscape character areas are shown as a figure accompanying the PEI Report to illustrate the areas at a scale appropriate to the Scheme. Relevant management plans or strategies, which have informed the assessment and design, will be detailed within the ES.</p>
Air Quality	Appendix - Air Quality	The assessment should take account of the risks of air pollution and how these can be managed or reduced.	The air quality risks associated with the Scheme for both the construction and operational phases will be assessed based on DMRB LA105 guidance. Where the risk of air quality impacts being significant is identified, appropriate monitoring and mitigation measures will be identified within the ES

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Ancient woodland and veteran trees	Appendix A - ancient woodland & veteran trees	We have consistently advised that the Arundel Bypass introduces a permanent severing impact to an existing permeable quality habitat complex which will significantly affect bat flight lines and the ability of the woodland and surrounding ecosystems to function in the landscape. The severing impact of the bypass must be an overarching principle of the ES as it is a critical impact of the scheme in this exceptional environment.	The Biodiversity chapter of the ES will include an assessment of the potential for significant effects on ancient woodland from construction and operation of the Scheme, including an assessment of severance where required. Mitigation to avoid and reduce significant adverse effects will be outlined in the ES.
Assessment of Severance	Appendix A	We note that an assessment of the functionality of these habitats has not been included. Indeed, it is not clear how this key assessment will take place through the EIA. For example, hedgerow habitats form fundamental habitat links through the landscape, contributing to the resilience of ecosystems. This is not captured in the Report and must form an overarching factor from which to judge the scale of impact of this scheme.	Linear features in the landscape such as hedgerows and watercourses provide habitat links throughout the wider landscape. The Biodiversity chapter of the ES will include an assessment of the potential for significant effects on protected species and habitats from construction and operation of the Scheme, including potential severance effects in relation to functionally linked habitats and will detail the mitigation to avoid and reduce significant adverse effects

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Regionally and Locally Important Sites	Appendix A - Regionally and Locally Important Sites	The EIA will need to consider any impacts upon local wildlife and geological sites.	<p>The Biodiversity chapter of the ES will include an assessment of the potential for significant effects on local wildlife sites from construction of the Scheme.</p> <p>The Geology and Soils chapter of the ES will include an assessment of the potential for significant effects on designated and undesignated geological sites from construction and operation of the Scheme.</p>
Cumulative and in-combination effects	Appendix - Cumulative and in-combination effects	<p>The ES should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment, (subject to available information):</p> <ol style="list-style-type: none"> <li>a. existing completed projects;</li> <li>b. approved but uncompleted projects;</li> <li>c. ongoing activities;</li> <li>d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and</li> <li>e. plans and projects which are reasonably</li> </ol>	<p>The Cumulative and In-combination effects chapter of the ES will develop a long list of developments that meet the following criteria as per PINS Advice note 17:</p> <ul style="list-style-type: none"> <li>- development currently under construction;</li> <li>- approved applications which have not yet been implemented (covering the past five years and taking account of those that received planning consent over three years ago and are still valid but have not yet been completed);</li> <li>- submitted applications not yet determined;</li> <li>- refused applications, subject to appeal procedures not yet determined;</li> <li>- projects on the National Infrastructure</li> </ul>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.	<p>Planning Programme of Projects;</p> <ul style="list-style-type: none"> <li>- development identified in the relevant Development Plan (and emerging Development Plans); and</li> <li>- development identified in other plans and programmes which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.</li> </ul> <p>It should be noted that existing completed projects will be assessed as part of the future baseline within each environmental topic chapter.</p>
Nationally Designated Landscapes	Appendix - Nationally Designated Landscapes	As the scheme is within the setting of The South Downs National Park, consideration should be given to the direct and indirect effects upon this designated landscape and in particular the effect upon its purpose for designation within the Environmental Impact Assessment, as well as the content of the relevant management plan for The South Downs National Park.	The Dark Skies landscape of the SDNP, Special Qualities, management plan and purposes of designation of the SDNP will be further explored within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Detailed advice on Landscape Assessment	Appendix - Detailed advice on Landscape Assessment	In undertaking the EIA NE advises that HE should pay close regard to the policy tests contained in the NPS and clearly set out how the scheme's design principals will address these.	The ES and Landscape and Environment Masterplan will play close regard to the NPS.
Further Surveys and design	Appendix A	The ES must fully assess temporary impacts via construction activities, this will widen the area of impact and therefore the magnitude of this needs to be fully assessed.	The ES will assess the potential for significant effects on protected and notable habitats and species from construction and operation of the Scheme.
Further Surveys and design	Appendix A	5.4.12 uses the term offsetting which we advise is not appropriate. We advise that the ES follows the mitigation hierarchy through assessment and designing a scheme which demonstrably avoids significant harm to biodiversity.	The ES will follow the mitigation hierarchy as outlined in DMRB LA 104.
Design, mitigation and enhancement measures	Appendix 8.6. Design, mitigation and enhancement measures	We welcome an environmentally led design process as stated in 8.6.1. We however do not agree that <i>this has already been demonstrated via the preferred route announcement avoiding the SDNP and areas of ancient woodland.</i> NE clearly advised that the Online options for this scheme presented the least damaging options for environment and landscape. Although the scheme avoids direct impact on ancient woodland the chosen route will have significant impacts on	The ES will fully address potential landscape and visual impacts on the SDNP and surrounding landscape.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>a National park and an extraordinary environment, which the EIA must fully address.</p>	
<p>Severance within landscape and environment led approach</p>	<p>Main letter - Integrated approach</p>	<p>Defra bodies and the South Downs National Park have consistently advised that a bespoke, landscape- scale assessment is required in order to accurately appraise the impact of this scheme on landscape and biodiversity and floodplain habitats and to ensure mitigation is fit for purpose in this rich and diverse environment.</p> <p>We have advised that an assessment of the impact of severance on landscape, biodiversity and the floodplain must be a key principle for scheme.</p> <p>Expectation of offsite mitigation/compensation, significant impact to National Park and need to demonstrate conservation/enhancement via BNG. We welcome a landscape and environment led approach. However, we advise that a landscape-scale assessment requires as an overarching principle, an assessment of severance within the</p>	<p>The ES will include an assessment of severance effects and will detail how the Scheme has incorporated design measures to avoid and minimise effects of severance on bats and other ecological receptors where required and will outline mitigation and compensation measures to be adopted. Consultation will be undertaken with Natural England to discuss the Scheme and proposed mitigation and compensation measures.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		EIA. This will be critical for this scheme which introduces a major severing impact into a highly complex and interconnected environment. We have highlighted how if severance is not accurately assessed, any mitigation will not be able to demonstrate that it will be fit for purpose.	
Assessment of Severance	Appendix A- Assessment of Severance	NE advises that survey, impact assessment and mitigation proposals for Habitats and Species of Principal Importance should be included in the ES. Consideration should also be given to those species and habitats included in the relevant Local BAP.	The ES will include an assessment of the potential for significant effects on habitats and species of principal importance, including those listed within the relevant Local Biodiversity Action Plan and protected and notable species from construction and operation of the Scheme.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Habitats and Species of Principal Importance	Appendix A- Habitats and Species of Principal Importance	We advise that the ES should thoroughly assess the impact of the proposals on habitats and/or species listed as 'Habitats and Species of Principal Importance' within the England Biodiversity List.	The ES will include an assessment of the potential for significant effects on habitats and species of principal importance within the England Biodiversity List, from construction and operation of the scheme.
Design, mitigation and enhancement measures	Appendix A - Design, mitigation and enhancement measures	The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats)	The ES will include an assessment of the potential for significant effects on protected and notable species from construction and operation of the Scheme.
Design, mitigation and enhancement measures	Appendix 8.6. Design, mitigation and enhancement measures	The assessment should refer to the relevant National Character Areas which can be found on our website. Links for Landscape Character Assessment at a local level are also available on the same page.	The ES will refer to all relevant Landscape Character Areas at a national and local level.
General Principles	Appendix A	The scheme should demonstrate how measures (such as the location, design, scale and site layout) have been designed to avoid impacts to biodiversity and geodiversity assets, fully mitigate them or as a last resort compensate for any residual impacts.	The ES will set out how the Scheme has incorporated design measures to avoid and minimise effects on biodiversity and geodiversity assets and will outline any additional mitigation and compensation measures to be adopted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Bat crossings	Main letter - Bats	<p>We advise that it is currently not clear how the EIA will assess this and the risk of mitigation efficacy with regard to bat crossings is of particular concern.</p> <p>NE have advised that the presence of maternity roosts for rare bat species is of international significance and, together with the wider bat species assemblage (of at least 14 species), indicates the landscape as being of the highest quality.</p> <p>The impact of severance of these habitats for bat species therefore clearly requires particular consideration to ensure that the species present are not adversely affected by the proposals. The impacts to bats with regards to barrier effects, collision mortality, habitat fragmentation and edge effects are considerable.</p> <p>We have highlighted that early and thorough assessment of impacts to bats is of particular importance as it is unclear how the required level of confidence in the efficacy of avoidance, mitigation and/or compensation measures can be demonstrated given the clear significance of this</p>	<p>The ES will set out how the Scheme has incorporated design measures to avoid and minimise effects on ecological receptors and will outline mitigation and compensation measures to be adopted. Surveys for bats have been undertaken between 2017 and 2021 which have identified the presence of 15 bat species. During 2021 surveys have included radio tracking and trapping surveys and collinear monitoring of bats trapped at roosts to further interrogate the use of habitat features that may be impacted by the Scheme. Survey results will be detailed within the ES and will be used to assess impacts of severance on bats. Consultation with Natural England to discuss the Scheme and proposed mitigation measures will be undertaken.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		area, and the lack of clear evidence to support the effectiveness of such measures.	
Further Surveys and design	Appendix A	We advise that the EIA must include an impact assessment of severance, as above. This impact is mentioned in relation to construction but not operation and no assessment methodology is included for this key impact.	<p>The ES will assess the impacts of severance from construction and operation of the Scheme.</p> <p>The ES will set out how the Scheme has incorporated design measures to avoid and minimise impacts on ecological features including severance and will outline any additional mitigation and compensation measures to be adopted.</p>
Design, mitigation and enhancement measures	Appendix 8.6. Design, mitigation and enhancement measures	The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage. Due to the overlapping timescale of their progress through the planning system, cumulative impact of the proposed development with those proposals currently at Scoping stage would be	The ES will take into account the future baseline of the landscape, including the emerging development at Avisford Grange on the northern edge of the settlement of Walberton. The ES will also consider cumulative effects of the Scheme including those at scoping stage, particularly projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		likely to be a material consideration at the time of determination of the planning application.	
Classification of habitats	Appendix A - Table 20 corrections (classification of habitats)	<p>We note with concern that the importance of a number of Habitats of Principle Importance has been incorrectly classified in the EIA Scope and this needs to be urgently addressed.</p> <p>Examples include:</p> <ul style="list-style-type: none"> <li>• Deciduous Woodland,</li> <li>• Wet Woodland,</li> <li>• Traditional Orchards,</li> <li>• Hedgerows,</li> <li>• Coastal Floodplain and Grazing Marsh,</li> <li>• Rivers,</li> <li>• Ponds ,</li> <li>• Coastal Saltmarsh,</li> <li>• Arable Field Margins.</li> </ul> <p>The above are of national importance. It is not appropriate to attribute condition of these habitats as a factor of their importance, it is the habitats per se that are significant.</p>	The importance assigned to ecological features will be in accordance with the guidance outlined in Table 3.9 of DMRB LA 108 (revision 1). The ES will provide justification as to the importance value assigned to each ecological feature.
SDNP Special Qualities	Main Letter	The Arundel Bypass has significant impacts to the setting and Special Qualities of The South Downs National Park. The scheme will sever Arundel from its valley and impact on the National Park's	The impacts of the Scheme on the SDNP will be detailed within the relevant chapters of the ES, including the Special Qualities of the SDNP which will be specifically addressed

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>statutory purpose.</p> <p>The EIA will need to carefully consider the profound impact of the Arundel Bypass on this highly sensitive nationally significant landscape.</p>	<p>with respect to the identified local landscape character areas.</p>
Habitats and Species of Principal Importance	Appendix A- Habitats and Species of Principal Importance	<p>The EIA must contain robust information regarding how impacts will follow the requirements of the mitigation hierarchy of avoiding and mitigating impacts as a priority.</p>	<p>The mitigation hierarchy as detailed in DMRB LA 104 has been followed. Mitigation measures have been embedded in the Scheme design to avoid, reduce and remediate significant effects as well as identifying the need for additional mitigation measures over and above those embedded in the design.</p>
Table 21	Appendix A	<p>Table 20 states that the phase 1 survey will be completed within 100m of the scheme, however this was previously stated to be 200m.</p> <p>Due to the nature and location of this scheme it is essential that the surveys to inform the EIA cover sufficient area from which to assess the fragmentation effects of this scheme. We have advised that a landscape-scale assessment is required for this purpose.</p>	<p>The Phase 1 habitat survey has covered all land within 100m of the centreline of the Scheme. A gap analysis is being undertaken to identify any additional areas that may require survey.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Green Bridges	Appendix A - further survey & design	We have previously advised that multiple quality green bridges will be a minimum requirement for severance impacts of the scheme and this has not been included in the Scope.	The Preliminary Landscape and Environment Masterplan for the Scheme presented in the PEI Report (Figure 2-1) includes two green bridges, two underpasses suitable for bats as well as a viaduct over the River Arun and floodplain.
Detailed advice on Landscape Assessment	Appendix - Detailed advice on Landscape Assessment	NE advises that the EIA must include a clear assessment of the effect of the scheme on these special qualities. We therefore welcome 8.8.3 which confirms that this will be included in the EIA.	The Special Qualities of the SDNP will be addressed within the ES.
An integrated landscape-scale approach	Appendix - An integrated landscape-scale approach	We advise that a landscape- scale assessment is required in order to fully evaluate the impact of this scheme on both landscape and biodiversity and to ensure any mitigation is fit for purpose. In reflection of this The Defra bodies have collectively advised the following: [list excluded]	The study area used within the ES uses professional judgement to determine an area beyond which there is not likely to be significant landscape and visual effects. This area is subject to change following further consultation and field work following the issue of the PEI Report. The development of the Preliminary Landscape and Environmental Masterplan has taken into account other relevant disciplines to inform design decisions, including Hydrology and Biodiversity, to create a collaborative approach. The ES will refer to potential

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			severance in the landscape and detail how this has been mitigated.
Heritage Landscapes	Appendix - Heritage Landscapes	You should consider whether there is land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific or historic interest. An up-to-date list may be obtained at <a href="http://www.hmrc.gov.uk/heritage/lbsearch.htm">www.hmrc.gov.uk/heritage/lbsearch.htm</a>	This is noted, but not an issue which requires addressing within the ES.
Cumulative and in-combination effects	Appendix - Cumulative and in-combination effects	This section which includes in-combination and cumulative assessments does not appear to include consideration of the impact of Rampion II NSIP for the Arundel Bypass scheme. It will be of key importance to include this project, specifically the requirements for cable infrastructure in the vicinity of the Arundel Bypass.	This project will be included within the biodiversity assessment, including HRA, and liaison with the Rampion II scheme will be undertaken to understand where impacts fall within the Order Limits. It will also be considered for potential cumulative effects within the ES chapter.
Rights of Way, Access land, Coastal access and National Trails	Appendix - Rights of Way, Access land, Coastal access	The EIA should consider potential impacts on access land, public open land, rights of way and coastal access routes in the vicinity of the development. We also recommend reference to the relevant Right of Way Improvement Plans	This will be considered in the ES with appropriate reference to Right of Way Improvement Plans (ROWIP).

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	and National Trails	(ROWIP) to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.	
Design, mitigation and enhancement measures	Appendix A - Design, mitigation and enhancement measures	We advise that the risk of mitigation efficacy is highlighted. For example the efficacy of wildlife crossings for bats is widely debated and far from certain. We therefore advise that this significant risk is given due weight in the review of mitigation complexity.	This will be included in the ES.
Ecological Aspects of an Environmental Statement	Appendix A - Ecological Aspects of an Environmental Statement	Potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance on such matters.	This will be included within the ES.
Environmental Net Gain	Appendix A - Environmental Net Gain	Where habitat compensation will be required for any of the habitats or species impacted by the development, the long-term security and management of the site(s) needs to be secured and we recommend that the mechanism for this should be detailed within the ES.	This will be outlined in the first iteration EMP and the landscape and ecological management plan, which will be secured through the DCO.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
<b>Public Health England</b>			
Emissions to air and water	Appendix 1 - Emissions to air and water	Include an evaluation of the public health benefits of development options which reduce air pollution – even below limit values – as pollutants such as nitrogen dioxide and particulate matter show no threshold below which health effects do not occur.	A commentary of predicted air quality impacts will be provided within the ES chapter for all relevant receptor locations considered. Total pollutant concentrations within the air of NO <sub>x</sub> , NO <sub>2</sub> and PM <sub>10</sub> will be compared to their objective values or limit values as appropriate. The air quality objective values for these pollutants have been set with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment. For this reason and in line with the policy test within the National Networks National Policy Statement (NNNPS) the air quality assessment will focus on the significance of effects at concentrations above these air quality thresholds.
Emissions to Water	Appendix 1 - Emissions to air and water	Baseline, assessment and future monitoring of impacts should identify and consider all routes by which emissions may lead to population exposure (e.g., surface watercourses, recreational waters, sewers, geological routes etc.)	A conceptual impact pathway model has been developed for the water environment and has been used to guide the iterative impact assessment for flood risk, the water environment and WFD requirements. This has identified all potential impact receptors

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			and has been used to guide the developing Scheme design to reduce the risk of adverse impacts to these receptors. A full assessment of residual impacts will be reported in the ES.
Emissions to Water	Appendix 1 - Emissions to air and water	Baseline, assessment and future monitoring of impacts should assess the potential off-site effects of emissions to groundwater (e.g., on aquifers used for drinking water) and surface water (used for drinking water abstraction) in terms of the potential for population exposure.	A conceptual impact pathway model has been developed for the water environment and has been used to guide the iterative impact assessment for flood risk, the water environment and WFD requirements. This has identified all potential impact receptors and has been used to guide the developing Scheme design to reduce the risk of adverse impacts to these receptors. A full assessment of residual impacts will be reported in the ES.
Emissions to air and water	Appendix 1 - Emissions to air and water	Whilst screening of impacts using qualitative methodologies is common practice (e.g., for impacts arising from fugitive emissions such as dust), where it is possible to undertake a quantitative assessment of impacts then this should be undertaken.	A quantitative assessment of impacts will be completed for construction and operation phase traffic emissions. For the construction phase dust fugitive emissions, a qualitative risk-based approach in line with LA105 will be undertaken. The outcome of this qualitative risk assessment will inform the appropriate dust monitoring and mitigation measures.

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			This is considered to be a proportionate approach for the construction phase. This is because construction dust is considered to be capable of being mitigated through the implementation of a qualitative risk assessment and the application of suitable dust monitoring and mitigation.
Emissions to Water	Appendix 1 - Emissions to air and water	Baseline, assessment and future monitoring of impacts should include assessment of potential impacts on human health and not focus solely on ecological impacts.	All receptors associated with the water environment are considered within the EIA process, including abstractors, discharges and recreational users of waterbodies.
Emissions to Water	Appendix 1 - Emissions to air and water	Baseline, assessment and future monitoring of impacts should include consideration of potential impacts on recreational users (e.g., from fishing, canoeing etc.) alongside assessment of potential exposure via drinking water.	All receptors associated with the water environment are considered within the EIA process, including abstractors, discharges and recreational users of waterbodies.
Vulnerable groups	Appendix 1 - Vulnerable groups	The assessments and findings of the Environmental Statement and the EqIA should be crossed referenced between the two documents, particularly to ensure the assessment of potential impacts for health and inequalities and that resulting mitigation measures are mutually supportive.	Appropriate cross-referencing will be included between the ES and the EqIA.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	Identify and consider impacts on residential areas and sensitive receptors (such as schools, nursing homes and healthcare facilities) in the area(s) which may be affected by emissions. This should include consideration of any new receptors arising from future development.	As set out in DMRB Air Quality Guidance (LA105) receptors included within the air quality assessment will be selected based on their location being within 200m of the Affected Road Network identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area will be included within the assessment. Where the risk of impacts being significant is identified, additional receptors in that area will be considered to ensure that the determination of overall significance is completed in line with DMRB guidance. The receptors that will be considered include residential locations, nursing homes, schools and healthcare facilities as appropriate. Information on future development and new potential sensitive receptors for air quality will be gathered and considered as appropriate within the air quality chapter of the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	Include appropriate estimates of background levels (i.e., when assessing the human health risk of a chemical emitted from a facility or operation, background exposure to the chemical from other sources should be taken into account).	<p>Background concentrations of oxides of nitrogen (NO<sub>x</sub>), nitrogen dioxide (NO<sub>2</sub>) and particulates (PM<sub>10</sub>) will be used in the assessment of air quality impacts for the Scheme to generate total pollutant concentrations. The background concentrations will be taken from The Department for Environment, Food and Rural Affairs (Defra) background mapping dataset, from which any sources explicitly modelled as part of the Scheme assessment will be removed to avoid double counting of emission sources. This approach is consistent with Design Manual for Roads and Bridges Air Quality Guidance (LA105).</p> <p>Baseline water quality is being determined for watercourses and aquifers with an identified impact pathway</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Electromagnetic fields (EMF)	Appendix 1 - Electromagnetic fields (EMF)	<p>The following information provides a framework for considering the health impact associated with the electric and magnetic fields produced by the proposed development, including the direct and indirect effects of the electric and magnetic fields as indicated above.</p> <p>Policy Measures for the Electricity Industry (See appendix)  Exposure Guidelines (See appendix)  Static magnetic fields (See appendix)  Power frequency electric and magnetic fields (See appendix)  Long term effects (See appendix)  The Stakeholder Advisory Group on ELF EMFs (SAGE)(See appendix)</p>	<p>Consideration of potential impacts arising from electric and magnetic fields is not a consideration within the DMRB guidance and methodology proposed for undertaking the assessment of Human Health effects. This topic is scoped out of the EIA, as there is no potential for significant environmental effects.</p>
Emissions to air and water	Appendix 1 - Emissions to air and water	<p>Consider the construction, operational, and decommissioning phases.</p>	<p>Construction and operational emissions will be considered as part of the assessment of impacts reported in the ES. Decommissioning is not addressed in the EIA as the Scheme will be in use beyond the design life of the road infrastructure. See Section 2.7 of the PEI Report for further details.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	Include appropriate screening assessments and detailed dispersion modelling where this is screened as necessary.	DMRB Air Quality Guidance (LA105) incorporates traffic screening criteria which will be used to determine which areas of the road network will be included within the air quality assessment. Within the air quality study area sensitive receptors (e.g., worst case residential properties) will be modelled using detailed dispersion modelling. This will be undertaken using ADMS-Roads for both the construction and operation phase.
Emissions to air and water	Appendix 1 - Emissions to air and water	Include consideration of local authority, Environment Agency, Natural Resources Wales, Defra national network, and any other local site-specific sources of monitoring data.	Existing local authority air quality monitoring data and data collected by National Highways will be reviewed and where appropriate used within the verification of dispersion modelling and background pollutant concentrations. Full details of the air quality monitoring data used and any data it was not appropriate to utilise will be provided within the air quality appendices of the ES.
Emissions to air and water	Appendix 1 - Emissions to air and water	Fully account for fugitive emissions.	Fugitive emissions will be considered as part of the construction phase assessment of local air quality impacts. Depending on the predicted risks associated with fugitive construction phase emissions, appropriate air

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			quality monitoring and mitigation will be identified within the ES and associated first iteration of the EMP.
Impacts arising from construction and decommissioning	Appendix 1 - Impacts arising from construction and decommissioning	Any assessment of impacts arising from emissions or activities due to construction and decommissioning should consider potential impacts on all receptors and describe monitoring and mitigation during these phases. Construction and decommissioning will be associated with vehicle movements and cumulative impacts should be accounted for.	<p>Impacts of construction phase activities will be considered in relation to construction dust emissions. Changes in traffic emissions due to both construction vehicles (e.g. additional HGVs and worker transport) and also construction traffic management will also be considered. Dependent on the predicted impacts or risks associated with the construction phase appropriate air quality monitoring and mitigation will be identified within the ES and associated first iteration EMP. Potential construction phase air quality emissions will be considered in isolation and cumulatively as appropriate.</p> <p>Decommissioning is not addressed in the EIA as the Scheme will be in use beyond the design life of the road infrastructure. See Section 2.7 of the PEI Report for further details.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Vulnerable populations	Main Letter – Recommendation	The ES should continue the initial identification of baseline data encompassing deprivation, demographics and other socio-economic factors. Local inequalities should be identified and the ES should highlight where the scheme may increase or decrease local inequalities.	Inequalities will be considered in relation to Human Health. A full consideration of equalities impacts will also be completed within a dedicated Equalities Impact Assessment.
Vulnerable groups	Appendix 1 - Vulnerable groups	The effects on health and wellbeing and health inequalities of the scheme will have particular effect on vulnerable or disadvantaged populations, including those that fall within the list of protected characteristics. Some protected groups are more likely to have elevated vulnerability associated with social and economic disadvantages. Consideration should be given to language or lifestyles that influence how certain populations are affected by impacts of the proposal, for example non-English speakers may face barriers to accessing information about the works or expressing their concerns.	Inequalities will be considered in relation to Human Health. A full consideration of equalities impacts will also be completed within a dedicated Equalities Impact Assessment.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	PHE's view is that the applicant should appraise and describe the measures that will be used to control both point source and fugitive emissions and demonstrate that standards, guideline values or health-based values will not be exceeded due to emissions from the installation, as described above. Further to assessments of compliance with limit values, for non-threshold pollutants (i.e., those that have no threshold below which health effects do not occur) the benefits of development options which reduce population exposure should be evaluated.	Mitigation measures for the construction phase dust and plant emissions will be identified within the Air Quality ES Chapter and incorporated within the first iteration EMP for the Scheme. Any other operational mitigation that could be required to manage traffic emissions in the operational phase, if required, will also be set out. There are no point sources associated with the operation of the Scheme. Total pollutant concentrations within the air of NO <sub>x</sub> , NO <sub>2</sub> and PM <sub>10</sub> will be compared to their objective values or limit values as appropriate. The air quality objective values for these pollutants have been set with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment. For this reason and in line with the policy test within the National Networks National Policy Statement (NNPS) the air quality assessment will focus on the significance of effects at concentrations above these air quality thresholds.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Physical activity / access to open space	Main Letter – Recommendation	The ES should identify levels of usage and demand on any lost open space and how this may impact on the local community and any inequality of access for the local communities.	No land designated as open space is expected to be lost to construct or operate the Scheme.
Compulsory purchase	Appendix 1- Compulsory purchase	Any compulsory purchase support schemes should ensure sufficient competency in public health, including public mental health, in order to help support local communities. The aim would be to establish a workforce that is confident, competent and committed to: <ul style="list-style-type: none"> <li>• promote good physical and mental health across the population</li> <li>• prevent mental illness and suicide</li> <li>• improve the quality and length of life of people living within affected communities</li> </ul>	Noted.
Emissions to air and water	Appendix 1 - Emissions to air and water	Include Chemical Abstract Service (CAS) numbers alongside chemical names, where referenced in the ES.	Noted.
Emissions to air and water	Appendix 1 - Emissions to air and water	When quantitatively assessing the health risk of genotoxic and carcinogenic chemical pollutants, PHE does not favour the use of mathematical models to extrapolate from high dose levels used in animal carcinogenicity studies to well below the	Noted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>observed region of a dose-response relationship. When only animal data are available, we recommend that the Committee on Carcinogenicity of Chemicals approach is used.</p>	
Emissions to air and water	Appendix 1 - Emissions to air and water	<p>Consider the typical operational emissions and emissions from start-up, shut-down, abnormal operation and accidents when assessing potential impacts and include an assessment of worst-case impacts.</p>	<p>The air quality assessment will consider operational phase emissions in line with DMRB guidance. Consideration of start-up or shut-down scenarios is not applicable for road schemes. The DMRB guidance focuses on the assessment of a realistic worst case during typical operating conditions and the potential impacts on annual air quality objectives at sensitive receptor locations (e.g. residential properties). Information will also be presented within the ES to set out the plans for abnormal operation, such as accidents. However, as periods of abnormal operation are expected to occur seldomly these effects are very unlikely to affect relevant annual air quality objectives. Therefore, quantitative assessment of these abnormal operations is not anticipated to be required for air quality.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	Identify cumulative and incremental impacts (i.e., assess cumulative impacts from multiple sources), including those arising from associated development, other existing and proposed development in the local area, and new vehicle movements associated with the proposed development; associated transport emissions should include consideration of non-road impacts (i.e., rail, sea, and air).	The assessment of air quality impacts during the operation of the Scheme will be inherently cumulative. This is due to the inclusion of future committed developments and general growth within the road traffic forecasts on which the air quality dispersion modelling is based. Additionally, the air quality predictions are cumulative as they incorporate the contributions to pollutant concentrations from other background sources of pollutants.
Human and environmental receptors	Appendix 1 - Human and environmental receptors	The applicant should clearly identify the development's location and the distance of the development to off-site receptors that may be affected by emissions from, or activities at, the development. Off-site receptors may include people living in residential premises; people working in commercial, and industrial premises and people using transport infrastructure (such as roads and railways), recreational areas, and publicly-accessible land. Consideration should also be given to environmental receptors such as the surrounding land, watercourses, surface and groundwater,	The ES will clearly describe the Scheme's location within the surrounding environment, including distances to sensitive receptors including those outside of the draft Order Limits within the study area. All potential water pathways and receptors (including users of watercourse and aquifers) are being considered within the EIA.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		and drinking water supplies such as wells, boreholes and water abstraction points.	
Emissions to air and water	Appendix 1 - Emissions to air and water	<p>Where UK standards or guideline values are not available, or other reputable International bodies e.g. European Union or OECD:</p> <ul style="list-style-type: none"> <li>o If no standard or guideline value exists, the predicted exposure to humans should be estimated and compared to an appropriate health-based value (e.g., a Tolerable Daily Intake or equivalent);</li> <li>o This should consider all applicable routes of exposure (e.g., include consideration of aspects such as the deposition of chemicals emitted to air and their uptake via ingestion).</li> </ul>	The key pollutants of concern for air quality and road transport have relevant UK air quality objective values. Rates of nitrogen deposition will be compared to critical loads gathered from the UK Air Pollution Information System (APIS).
Wider Determinants of Health	Appendix 1 - Wider Determinants of Health	We accept that the relevance of wider determinants and associated impacts will vary depending on the nature of the proposed development. PHE has focused its approach on scoping determinants of health and wellbeing under four themes, which have been derived from an analysis of the wider determinants of health mentioned in the National Policy Statements. The four themes are:	<p>The methodology proposed for undertaking the assessment is based on DMRB guidance. The determinants included within the assessment, and considered to align with the four themes, are:</p> <ul style="list-style-type: none"> <li>Access to healthcare</li> <li>Access to open space</li> <li>Access to work and training</li> </ul>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<ul style="list-style-type: none"> <li>- Access</li> <li>- Traffic and Transport</li> <li>- Socioeconomic</li> <li>- Land Use</li> </ul> <p>PHE has developed a list of 21 determinants of health and wellbeing under these four broad themes (see appendix 2). These determinants should be considered within any scoping report and if the applicant proposes to scope any areas out of the assessment, they should provide clear evidence-based reasoning and justification.</p>	<p>Access to active travel</p> <p>New employment and training opportunities</p> <p>Air quality</p> <p>Noise and vibration</p> <p>Landscape amenity</p>
Methodology	Appendix 1 - Methodology	<p>PHE will expect assessments to set out the methodology used to assess impacts on each determinant included in the scope of the assessment. In some instances, the methodologies described may be established and refer to existing standards and/or guidance. In other instances, there may be no pre-defined methodology, which can often be the case for the wider determinants of health; as such there should be an application of a logical evidence based impact assessment method. (See appendix for more details of methodology)</p>	<p>The methodology proposed for undertaking the assessment is based on DMRB guidance.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	Encompass the combined impacts of all pollutants which may be emitted by the development with all pollutants arising from associated development and transport, considered in a single holistic assessment (i.e., of overall impacts).	The only emission source for the Scheme in the operational phase is road transport and this will be assessed and reported within the ES. There are no other sources of air emissions.
Environmental Public Health	Main Letter - Environmental Public Health	We believe the summation of relevant issues into a specific section of the report provides a focus which ensures that public health is given adequate consideration. The section should summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlighted. More detail on structure is provided in Appendix.	The relevant sections of the Population and Human Health ES Chapter will comprise these matters in full.
Community based reports	Appendix 1- Community based reports	Large complex schemes that involve significant effects on communities or significant cumulative effects can benefit from identifying impacts and reporting at an individual community level. This assists in the identification of the overall potential effects across a range of impacts. These community level reports will also aid local	This comment is acknowledged and will be considered.

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		communities to engage with consultations by providing relevant and accessible information.	
Environmental Public Health	Main Letter – Recommendation	We support approaches which minimise or mitigate public exposure to non-threshold air pollutants, address inequalities (in exposure), maximise co-benefits (such as physical exercise). We encourage their consideration during development design, environmental and health impact assessment, and development consent.	This is acknowledged as something to consider during the Scheme design development. However, it does not form part of the Population and Human Health ES chapter.
Ionising radiation	Appendix 1 - Ionising radiation	Particular considerations apply when an application involves the possibility of exposure to ionising radiation. In such cases it is important that the basic principles of radiation protection recommended by the International Commission on Radiological Protection <sup>21</sup> (ICRP) are followed. PHE provides advice on the application of these recommendations in the UK. As part of the EIA process PHE expects applicants to carry out the necessary radiological impact assessments to demonstrate compliance with UK legislation and the principles of radiation	This is not a consideration within the DMRB guidance and methodology proposed for undertaking the assessment of Human Health effects. This is scoped out of the EIA, as there is no potential for significant radiological environmental effects associated with the Scheme.

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		protection. This should be set out clearly in a separate section or report and should not require any further analysis by PHE. In particular, the important principles of justification, optimisation and radiation dose limitation should be addressed. In addition, compliance with the Euratom BSS and UK legislation should be clear.	
Replacement publicly accessible space or community assets	Appendix 1- Replacement publicly accessible space or community assets	The quality of the provision of replacement green space should be assessed.	This will be assessed in the ES where relevant.
Employment	Appendix 1- Employment	Where relevant any assessments should include: <ul style="list-style-type: none"> <li>• The impact of business relocation in order to identify the likely level of job losses within the study area</li> <li>• The proposed support mechanisms to be established for business owners and employees</li> <li>• A clear strategy and action plan that addresses barriers to employment within the local population and those that cease employment due to the DCO.</li> </ul>	This will be assessed in the ES where relevant.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Replacement publicly accessible space or community assets	Appendix 1- Replacement publicly accessible space or community assets	<p>The replacement of community assets provides opportunity for positive impacts and the design, location and operation of the replacement asset should be considered in consultation with user, the local community and agencies.</p> <p>Any replacement recreational land, open space or other community assets should be located and designed to:</p> <ul style="list-style-type: none"> <li>• Not unreasonably extend journey times or increase transport costs, or result in too many people being prevented from travelling sustainably due to unsuitable walking or cycling routes.</li> <li>• Ensure that accessibility planning has been properly taken into account and that the proposal will not adversely impact on disadvantaged groups.</li> <li>• Meet identified community needs which may go beyond direct replacement but can be reasonably incorporated.</li> <li>• Provide acceptable recreational amenity, including noise environment, for outdoor spaces associated with the individual community facilities.</li> <li>• The design of the sites should be carried out in consultation with the local community. It should</li> </ul>	This will be assessed in the PEI Report and ES where relevant.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>incorporate features and designs to enable access and use across the life course.</p> <ul style="list-style-type: none"> <li>• The PEIR should contain sufficient detail regarding the location and design in order to determine the acceptability of the replacement facilities.</li> <li>• Quality, quantity and accessibility should be determined against defined criteria agreed with stakeholders. The following evidence based assessment tools should be considered.</li> </ul>	
Mental Health	Main Letter – Recommendation and Appendix - Mental health	<p>We would recommend the use of the broad definition of health proposed by the World Health Organisation (WHO) and we welcome a specific reference to mental health. A systematic approach to the assessment of the effects on mental health, including suicide, is required.</p> <p>The ES should reference the methodology used to complete assessments for the effects on mental health and wellbeing. The Mental Well-being Impact Assessment (MWIA), could be used as a methodology. The assessment should identify vulnerable populations and provide clear mitigation strategies that are adequately linked to any local services or assets</p>	Human health is defined as “A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”. It includes mental health and this will be considered in the ES with appropriate reference to methodologies.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Mitigation	Appendix 1 - Mitigation	<p>If the assessment has identified that significant negative effects are likely to occur with respect to the wider determinants of health, the assessment should include a description of planned mitigation measures the applicant will implement to avoid or prevent effects on the population.</p> <p>Mitigation and/or monitoring proposals should be logical, feasible and have a clear governance and accountability framework indicating who will be responsible for implementation and how this will be secured during the construction and/or operation of the NSIP.</p> <p>Any proposed mitigation should have sufficient detail to allow for an assessment of the adequacy of the proposed mitigation measures.</p>	This will be reported in the ES where required.
Monitoring	Appendix 1- Monitoring	PHE expects an assessment to include consideration of the need for monitoring and the ES should clearly state the principles on which the monitoring strategy has been established, including monitoring in response to unforeseen impacts or effects.	This will be reported in the ES where required.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Wider Determinants of Health	Appendix 1 - Wider Determinants of Health	PHE's expectations are that the proponent of an NSIP will conduct a proportionate and evidence-based assessment of the anticipated direct and indirect effects on health and wellbeing in line with the relevant regulatory and policy requirements. Consideration should be given to impacts during the construction, operation and decommissioning phase of NSIPs. Consideration should be given to the avoidance or mitigation of any negative impacts, as well as to how the NSIP could be designed to maximise potential positive benefits.	This will be reported in the ES.
Evidence base and baseline data	Appendix 1 - Evidence base and baseline data	Baseline population / community health data (quantitative and qualitative) should be sufficient to represent current health status and identify areas or groups with poor health or inequalities. (See requirements in appendix).	This will be reported in the ES.
Positive benefits from the scheme	Appendix 1- Positive benefits from the scheme	PHE expects developments to consider and report on the opportunity and feasibility of positive impacts. These may be stand alone or be considered as part of the mitigation measures.	This will be reported in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Emissions to air and water	Appendix 1 - Emissions to air and water	Compare predicted environmental concentrations to the applicable standard or guideline value for the affected medium. Where available, the most recent UK standards for the appropriate media (i.e., air, water, and/or soil) and health-based guideline values should be used when quantifying the risk to human health from chemical pollutants.	Total pollutant concentrations within the air of NO <sub>x</sub> , NO <sub>2</sub> and PM <sub>10</sub> will be compared to the current objective values or limit values as appropriate. The air quality objective values for these pollutants have been set with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment.
Radiation Impacts	Main Letter – Recommendation	The applicant cites guidance in screening out any radiation impacts from assessment in the ES. The Scoping Consultation does not specifically reference Electric and Magnetic Fields (EMF); these may be of concern should the scheme require the relocation or diversion of electrical substations, overhead power lines or underground cables. Details are provided within the Appendix to this letter.	This topic is scoped out of the EIA, as there is no potential for significant EMF environmental effects.
Assessment	Appendix 1 - Other Aspects	Within the ES, PHE would expect to see information about how the applicant would respond to accidents with potential off-site emissions (e.g., flooding or fires, spills, leaks or releases off-site). Assessment of accidents should: identify all potential hazards in relation to construction, operation and decommissioning;	Noted. A preliminary assessment for the PEI Report has been undertaken which identified that it is highly likely that for all major event types, the design of the Scheme will ensure there is no risk or serious possibility of the event interacting with the Scheme. It is therefore considered at this stage that there

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		include an assessment of the risks posed; and identify risk management measures and contingency actions that will be employed in the event of an accident in order to mitigate off-site effects.	are unlikely to be any significant environmental effects associated with major events. This will be reported confirmed within the ES and included in technical ES chapters as necessary.
COMAH Regulations	Appendix 1 - Other Aspects	PHE would expect the applicant to consider the COMAH Regulations (Control of Major Accident Hazards) and the Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations: both in terms of their applicability to the development itself, and the development's potential to impact on, or be impacted by, any nearby installations themselves subject to these Regulations.	These will be considered in the ES.
Health Outcomes	Appendix 3 - Health Outcomes	PHE expects to see a clear outline of the steps taken to arrive at the final judgement of significance based on these health outcomes, including a description of local circumstances and modifiers anticipated, and how reasonably foreseeable changes in these circumstances will be dealt with during the assessment process.	A final judgement on significance will be made by considering a wide range of factors, as described in DMRB, and this process will be clearly documented in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Mitigation	Appendix 3 - Mitigation	<p>PHE expects consideration of potential adverse effects due to noise and vibration during construction and recommends that a full and detailed Construction Environmental Management Plan (CEMP) is developed and implemented by the Applicant and/or the contractor responsible for construction.</p> <p>PHE recommends that the CEMP includes a detailed programme of construction which highlights the times and durations of particularly noisy works, the measures taken to reduce noise at source, the strategy for actively communicating this information to local communities, and procedures for responding effectively to any specific issues arising.</p>	A first iteration EMP, which will be produced alongside the ES, will include details of the construction programme, mitigation measures to reduce noise, and communication procedures.
Land quality	Appendix 1 - Land quality	We would expect the applicant to provide details of any hazardous contamination present on site (including ground gas) as part of a site condition report and associated risk assessment.	A Ground Investigation Report (GIR) will be produced upon completion of the Phase 2 and 3 ground investigations. This will include a detailed contaminated land risk assessment, including where applicable ground gas. A summary of this assessment will be included in the ES. A PSSR (Desk Study and Preliminary Risk Assessment)

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			exists already which will be summarised in the ES.
Health Outcomes	Appendix 3 - Health Outcomes	Where schemes have the potential to impact a large number of people, PHE expects the Applicant to carry out literature scoping reviews to ensure that the most robust and up-to-date scientific evidence is being used to quantify adverse effects attributable to the Scheme.	Adverse health effects will be discussed in the Population and Human Health ES chapter, with reference to relevant scientific evidence as appropriate.
Emissions to air	Appendix 1 - Emissions to air and water	Baseline, Assessment and Monitoring should include consideration of impacts on existing areas of poor air quality e.g. existing or proposed local authority Air Quality Management Areas (AQMAs) or Clean Air Zones (CAZ). The applicant should demonstrate close working/consultation with the appropriate local authorities.	As set out in DMRB LA105 guidance, receptors included within the air quality assessment will be selected based on their location being within 200m of the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area, including any locations within AQMAs, will be included within the assessment. No locations of Clean Air Zones are present within the air quality study area. Consultation has already been undertaken

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			with relevant local authority air quality officers, and will continue to be undertaken during the assessment process for the ES.
Baseline Sound Environment	Appendix 3 - Baseline Sound Environment	<p>PHE recommends that traditional averaged noise levels are supplemented by a qualitative characterisation of the sound environment, including any particularly valued characteristics (for example, tranquillity) and the types of sources contributing to it [25].</p> <p>PHE recommends that baseline noise surveys are carried out to provide a reliable depiction of local diurnal noise variations for both weekdays and weekends, in a variety of locations, including the difference between day (07:00-19:00), evening (19:00-23:00) and night-time (23:00-07:00) periods.</p> <p>PHE suggests that a variety of metrics can be used to describe the sound environment with and without the scheme – for example, levels averaged over finer time periods, background noise levels expressed as percentiles, and number of event metrics (e.g. N65 day, N60 night) – and that, where possible, this suite of</p>	Baseline sound surveys, covering all time periods for both weekdays and weekends, are planned for a number of locations in the vicinity of the Scheme. These will be supplemented by quantitative modelling of road traffic noise and a qualitative characterisation of the sound environment in the ES considering many factors such as absolute levels, context and character. The focus of the reported baseline sound metrics will be those referred to in DMRB.

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		metrics is used to inform judgements of significance. There is emerging evidence that intermittency metrics can have an additional predictive value over traditional long-term time-averaged metrics for road traffic noise [27].	
Environmental Public Health	Main Letter - Environmental Public Health	We also note the applicant’s proposed baseline year for the traffic model and Air Quality Impacts Assessment is 2015. The rationale for this selection is unclear; in addition to the ‘committed development’ assessments proposed, the ES should detail the assumptions made in developing the subsequent traffic models, particularly around vehicle numbers and emission characteristics.	<p>DfT TAG guidance in TAG Unit M2.2 refers in section 4.4.3 to “<i>suitability of existing data sources (including existing matrices) for use in the matrix development should be considered, taking into account the:</i></p> <ul style="list-style-type: none"> <li>• <i>age of the data</i></li> <li>• <i>extent to which population, land-use, and transport network has changed</i>’</li> </ul> <p>TAG guidance no longer refers to an absolute age of the data used in traffic models but the suitability of the data which is used to inform the base year, which in the case of this Scheme is a base year of 2015. To that degree, the assessment will include any significant changes in the study area which may have affected travel distribution and using a comparison of mobile phone derived data from 2015 and 2019 to demonstrate the suitability of the base year for the model and</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			the appropriateness of its use for traffic forecasting. This will be clearly described within the ES.
Community Engagement and Consultation Feedback	Appendix 3 - Community Engagement and Consultation Feedback	PHE recommends that public consultations carried out during the planning application process clearly identify the predicted changes to the sound environment during construction and operation of the Scheme, the predicted health effects on neighbouring communities, proposed noise mitigation strategies and any proposed measures for monitoring that such mitigation measures will achieve their desired outcomes.	Expected impacts from construction and operation of the Scheme are reported in the PEI Report which is available for public consultation. The consultation process will include consideration of the approaches to presenting the likely impacts of the Scheme.
Emissions to air	Appendix 1 - Emissions to air and water	Baseline, Assessment and Monitoring should include modelling taking into account local topography, congestion and acceleration	For road traffic air quality assessments it is standard practice to undertake a model verification process by comparing model predictions against monitoring data. In this process a variety of factors such as local topography, congestion and acceleration are accounted. Additionally, the air quality assessment in the ES will incorporate speed bands that are intended to further capture congestion effects.

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Noise from National Networks and Airports	Appendix 1 - Noise from National Networks and Airports	PHE also recognises the developing body of evidence showing that areas of tranquillity offer opportunities for health benefits through psychological restoration. NSIP applications need to demonstrate that they have given due consideration to the protection of the existing sound environment in these areas.	Identification of potentially noise sensitive receptors includes consideration of public open spaces and impacts on these areas will be reported in the ES.
Mitigation	Appendix 3 - Mitigation	PHE suggests that monitoring of health and quality of life can be considered pre and post operational phases, to ascertain whether mitigation measures are having the desired effect for local communities.	In line with DMRB (LA111 Section 4) post construction monitoring is not necessarily a reliable gauge of the performance of the mitigation measure. Instead, the effectiveness of the mitigation measure should be ascertained with respect to its design specifications.
Emissions to air	Appendix 1 - Emissions to air and water	Baseline, Assessment and Monitoring should include modelling using appropriate meteorological data (i.e. from the nearest suitable meteorological station and include a range of years and worst-case conditions)	It is agreed that it is standard practice for assessment of air quality impacts for point sources to include multiple years of meteorological data. This is due to the interactions of different meteorological conditions with releases to the atmosphere at elevated release heights from stacks to understand uncertainties associated with changing meteorological conditions. However, for the Scheme there are no stack

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			emissions associated with the operational phase and so this process of sensitivity testing is not required. For road traffic air quality assessments it is standard practice to use one year of meteorological data and to minimise uncertainties through a model verification process by comparing model predictions against monitoring data, which is typically not possible for air quality assessments of point source emissions. This is the approach that will be adopted.
Health Outcomes	Appendix 3 - Health Outcomes	PHE encourages the applicant to present noise exposure data in terms of the Lden metric (in addition to Leq and L10), to facilitate interpretation by a broad range of stakeholders. PHE believes that quantifying the health impacts associated with noise exposure and presenting them in health-based metrics allows decision makers to make more informed decisions.	Noise levels will be provided in terms of LA10 and Lnight in line with DMRB. Health impacts will be discussed in the Population and Human Health ES chapter; if this requires data in terms of Lden it can be provided by the Noise and Vibration specialists.
Noise from National Networks and Airports	Appendix 1 - Noise from National Networks and Airports	PHE believes that Nationally Significant Infrastructure Projects (NSIP) should not only limit significant adverse effects, but also explore opportunities to improve the health and quality of life of local communities and reduce inequalities.	Opportunities to contribute to the improvement of health and quality of life will be considered within the context of government policy on sustainable

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			development, in line with the third aim of the Noise Policy Statement for England (NPSE).
Identification and Consideration of Receptors	Appendix 3 - Identification and Consideration of Receptors	<p>The identification of noise sensitive receptors in proximity to the proposed scheme - or route options - is essential in providing a full assessment of potential impacts.</p> <p>DMRB requires a list of noise mitigation measures that the project will deliver in Noise Important Areas. PHE supports this requirement - new development should offer an opportunity to reduce the health burden of existing transport infrastructure, particularly for those worst affected. PHE would encourage this approach to extend beyond NIAs, in line with the third aim of NPSE [3].</p>	Noise sensitive receptors in proximity to the scheme will be clearly identified and opportunities to contribute to the improvement of health and quality of life for these receptors, both inside and outside of NIAs, will be considered within the context of government policy on sustainable development, in line with the third aim of the Noise Policy Statement for England (NPSE), and will be reported in the ES.
Environmental Public Health	Main Letter - Environmental Public Health	We note the applicant's intention to 'scope out' the assessment of PM <sub>2.5</sub> emissions and concentration changes from the ES. PHE considers that this assessment should be	As set out in the EIA Scoping Report within paragraph 6.8.4. <i>"PM<sub>2.5</sub> will not be assessed with air quality modelling as it is not a requirement of DMRB LA 105. The UK currently meets its legal requirements for the</i>

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		provided to allow an assessment of the potential population health impacts	<p><i>achievement of the PM<sub>2.5</sub> air quality thresholds and the modelling of PM<sub>10</sub> can be used to demonstrate that the Scheme does not impact on the PM<sub>2.5</sub> air quality threshold. Baseline data in the approximate area of the previous TRA also indicates PM<sub>2.5</sub> concentrations are well within the relevant air quality objective." To provide further detail, the monitoring referred to in paragraph 6.8.4 is the PM<sub>2.5</sub> concentration monitored at Worthing Grove Lodge/Lyons Farm AQMA, which in 2018 was 10µg/m<sup>3</sup> compared to an objective of 25 µg/m<sup>3</sup> (See paragraph 6.4.8 of the EIA Scoping report). This is 60% lower than the air quality objective for PM<sub>2.5</sub> of 25 µg/m<sup>3</sup>, before any further improvements in air quality occur in the future due to anticipated improvements in vehicle emissions and background sources of pollution. As the air quality assessment within the ES will focus on the significance of pollutant concentrations that are in excess of objective values this monitoring shows that PM<sub>2.5</sub> quantitative assessment is not required, as PM<sub>2.5</sub> concentrations are so low in the anticipated study area, even within poorer locations of air</i></p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			<p>quality, such as an AQMA. However, as also set out in EIA Scoping Report paragraph 6.8.4 PM<sub>10</sub> concentrations will be presented in the ES to re-confirm that this position is correct for PM<sub>2.5</sub>. This approach can be adopted as PM<sub>2.5</sub> (particulates with a diameter of 2.5µm or less) is contained within the larger PM<sub>10</sub> (particulates with a diameter of 10µm or less) size fraction. This approach is in line with the policy test within the National Networks National Policy Statement (NNNPS) for air quality which focuses on the significance of effects for concentrations of pollutants above air quality thresholds.</p>
Significance of Impacts	Appendix 3 - Significance of Impacts	<p>Determining significance of impacts is an essential element of an Environmental Impact Assessment, and therefore significance needs to be clearly defined at the earliest opportunity by the Applicant. PHE recommends that the definition of significance is discussed and agreed with relevant stakeholders, including local authority environmental health and public health teams and local community representatives, through a documented consultation process. PHE recommends that any disagreement amongst</p>	<p>Significance of effect with regard to noise and vibration will be determined in line with DMRB (LA111) and stakeholders will have an opportunity to comment on this through the consultation process. PHE recommendation regarding determining significance is acknowledged and will be consider in light of any alternative approaches suggested by stakeholders.</p>

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		<p>stakeholders on the methodology for defining significance is acknowledged in the planning application documentation and could inform additional sensitivity analyses.  (Refer to Appendix 3 for details on significance methodology)</p>	
Step-changes in Noise Exposure and the Change-effect	Appendix 3 - Step-changes in Noise Exposure and the Change-effect	<p>The Applicant should take into consideration the “change-Effect”, i.e. the potential for a real or anticipated step-change in noise exposure to result in attitudinal responses that are greater or lower than that which would be expected in a steady state scenario [28, 32]. Where a perception of change is considered likely, PHE recommends that the change-effect is taken into account in the assessment for the opening year of the proposed development. For longer term assessments, the effects of population mobility need to be taken into consideration.</p>	<p>The assessment will include the determination of noise level change in the Scheme opening and future years, in accordance with the banding set out in DMRB (LA111). The determination of significance will include consideration of the perception of such changes. Both the short and long-term assessments account for changes to the local population based upon other committed development in the area. This is reflected in the traffic data used for the noise assessment.</p>
Mitigation	Appendix 3 - Mitigation	<p>PHE expects decisions regarding noise mitigation measures to be underpinned by good quality evidence, in particular whether mitigation measures are proven to reduce adverse impacts on health and quality of life. For interventions where evidence is weak or lacking, PHE expects</p>	<p>The assumed performance of mitigation measures will be outlined in the ES. It is anticipated that their initial effectiveness will be defined at the detailed design stage and their ongoing performance considered through routine maintenance.</p>

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		a proposed strategy for monitoring and evaluating their effectiveness during construction and operation, to ensure the effectiveness of said measures.	
Green Spaces and Private Amenity Areas	Appendix 3 - Green Spaces and Private Amenity Areas	PHE expects consideration to be given to the importance of existing green spaces as well as opportunities to create new tranquil spaces which are easily accessible to those communities exposed to increased noise from the scheme. These spaces should be of a high design quality and have a sustainable long-term management strategy in place.	The importance of such spaces is acknowledged and the impacts on green space will be discussed in the Population and Human Health ES chapter.
Land quality	Appendix 1 - Land quality	Emissions to and from the ground should be considered in terms of the previous history of the site and the potential of the site, during construction and once operational, to give rise to issues. Public health impacts associated with ground contamination and/or the migration of material off-site should be assessed in accordance with the Environment Agency publication Land Contamination: risk management and the potential impact on nearby	The land contamination assessment in the GIR and included within the ES will follow LCRM.

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		receptors; control and mitigation measures should be outlined.	
Waste	Appendix 1 - Waste	If the development includes wastes delivered to the installation consider issues associated with waste delivery and acceptance procedures (including delivery of prohibited wastes) and should assess potential off-site impacts and describe their mitigation.	The Material Assets and Waste chapter of the ES will consider waste management options in line with waste hierarchy principles and compliance with legal requirements, including Duty of Care. The environmental impact of waste management at established third party waste management facilities will be scoped out of the assessment.
Waste	Appendix 1 - Waste	For wastes arising from the development the ES should assess the implications and wider environmental and public health impacts of different waste disposal options.	The Material Assets and Waste chapter of the ES will consider waste management options in line with waste hierarchy principles. The environmental impact of waste management at established third party waste management facilities will be scoped out of the assessment.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Waste	Appendix 1 - Waste	For wastes arising from the development the ES should assess disposal route(s) and transport method(s) and how potential impacts on public health will be mitigated.	The Material Assets and Waste chapter of the ES will consider waste management options in line with waste hierarchy principles. The environmental impact of waste management at established third party waste management facilities will be scoped out of the assessment.
Green Spaces and Private Amenity Areas	Appendix 3 - Green Spaces and Private Amenity Areas	PHE expects proposals to take into consideration the evidence which suggests that quiet areas can have both a direct beneficial health effect and can also help restore or compensate for the adverse health effects of noise in the residential environment [29-31].	Noted. The noise assessment will include the calculation of external, free-field noise levels throughout the study area and these data will be available for comment on the health effects in the Population and Human Health ES chapter.
Mitigation	Appendix 3 - Mitigation	There is a paucity of scientific evidence on the health effects attributable to construction noise associated with large infrastructure projects [5, 6] where construction activities may last for a relatively long period of time. PHE recommends that the Applicant considers emerging evidence as it becomes available and reviews its assessment of impacts as appropriate.	This is acknowledged and emerging evidence will be considered within the Population and Human Health chapter of the ES if applicable.

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<b>South Downs National Park Authority</b>			
Soil management	Main Letter - Table	There is potential for soil compaction around veteran/ancient trees. Mitigation measures should be included as part of a Construction Environmental Management Plan.	A first iteration of the Environmental Management Plan (EMP) will be prepared as part of the EIA of the Scheme and submitted with the DCO application. If identified as required by the assessment, an outline Soils Management Plan (SMP) is likely to be required as part of the EMP to ensure delivery of measures necessary to protect valuable soil resources. One of the aims of the SMP would be encouraging avoidance of soil compaction.
Description of Study Area	Main Letter - Table	We note the description of the study area, however this is not mapped; we advise a map is provided. We note that the study area is likely to be refined and welcome the opportunity to comment on any refinement, particularly where judgements are made regarding the level of effects within the SDNP. In particular, we would like to comment and review whether the study area is adequate for the scheme as a whole, given there are landscape impacts associated	A map of the LVIA study area is provided with the Landscape and Visual PEI Report chapter, it should be noted that public consultation is an opportunity to comment on the study area.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		both with the design of the flood scheme and wider mitigation package.	
Arable weeds	Main Letter - Table	(With reference to arable weeds being scoped out of the assessment) SDNPA agree with this statement.	Noted. The Inspectorate was unable to scope this matter out, and further surveys were undertaken in July 2021. .
Loss of veteran trees	Main Letter - Table	In order to ensure appropriate compensation and mitigation measures, identification of veteran/ancient trees and the preparation of a plan, including protection of features during construction phase and mitigation/compensation measures if loss is unavoidable is advised.	An arboriculture survey and assessment has been undertaken. Measures to protect retained trees and required mitigation / compensation will be detailed in the ES.
LiDAR	Main Letter - Table	We would advise including available LiDAR data here.	An assessment of available LiDAR and aerial photographs will be presented in the DBA and ES.
Arun Valley SPA/Ramsar	Main Letter - Table	We would note that there could be in-combination effects that may result in a significant impact to the Arun Valley SPA/Ramsar (e.g. Rampion 2 cabling) and we would expect this to be considered as part of the HRA.	An HRA screening assessment (included as an appendix to the PEI Report) has been undertaken and it is considered that there will be no likely significant effect on the Arun Valley SPA/Ramsar.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Table 20 Notable habitats	Main Letter - Table	Owing to their significance, chalk streams should be included as a separate habitat type (e.g. Binsted and Tortington Rifes).	Assessment work undertaken to date has identified that, - The Tortington Rife shows no characteristics of being a chalk stream. - The Binsted Rife may be more characteristic of a chalk stream further upstream from the study area, but where the Scheme crosses the rife, the watercourse shows no chalk stream characteristics. Therefore, it should not be included as a separate habitat type.
Construction phase impacts	Main Letter - Table	Please add the effect of storage areas including topsoil, ancillary development such as signage, CCTV masts and lighting columns.	Construction phase of the Scheme will be fully assessed within the ES.
Construction Impacts	Main Letter - Table	We object to the reference that the effects of the development during construction are 'localised'. It is not possible at this stage to know this.	Construction phase of the Scheme will be fully assessed within the ES.  The study area has been refined in response to consultation, desk study and fieldwork since scoping. Effects which at this stage are considered likely to be significant are summarised in the PEI Report. The results of further, detailed assessment of construction effects related to landscape and views will be set out in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
CEMP	Main Letter - Table	Include specific section on mitigation and control measures in relation to designated features / habitats / woodlands / veteran trees in the CEMP.	Dependent on the predicted risks and significance of effects at designated habitats, ancient woodland and veteran trees, appropriate air quality monitoring and mitigation will be identified within the ES and associated first iteration EMP.
Impact to designated habitat	Main Letter - Table	Clarification of how the detailed reviews on the impact that air pollutants could have on designated habitats, ancient woodlands and veteran/ancient trees to be provided.	Full details of the assessment of impacts on designated habitats, ancient woodlands and veteran trees that are sensitive to changes in air quality will be provided within the ES in line with DMRB LA105 guidance.
Assessment of the impact in Geological Features is adequately scope in – and reference is made to consulting with Local Groups.	Main Letter - Table	We welcome the opportunity to comment further in respect of the approach to address geological impacts. However we would advise at the outset that Quaternary features are included in the survey as well as geo-archaeological expertise. For these, the SDNP as a whole should be considered a heritage asset.	Geoarchaeology and quaternary deposits are being considered in the ES. A number of geophysical and GI surveys are currently ongoing, assessing the presence and significance of these deposits, the results of which will be presented in the ES and sensitive receptors adequately assessed.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Landscape and environment-led approach	Main Letter	<p>The landscape and environment-led approach outlined in section 2.5 is welcomed in principle, although we would advise that this section should also reference the historic environment as well, e.g. natural and historic environment capital and natural and historic environment assets. Further, capturing enhancements to the historic environment should also be included. We would also request the following be added as multiple benefits in paragraph 2.5.5:</p> <ul style="list-style-type: none"> <li>• Optimising landscape mitigation to enhance landscape character and sense of place, and</li> <li>• Habitat creation, which enhances the setting to heritage assets and furthers enjoyment and understanding.</li> </ul>	<p>Historic environment has also been an important consideration in the design of the Scheme. The benefit mentioned in the first bullet point will be addressed in the Landscape and Visual ES chapter and the second in the Cultural Heritage ES chapter.</p>
Arun Valley SPA and SAC is located several kilometres upstream of the proposed scheme and	Main Letter - Table	<p>This does not align with the SAC being scoped in for HRA elsewhere. Therefore, the study area for HRA should be extended.</p>	<p>Hydrological and hydraulic pathways between the proposed Scheme alignment and the SAC have been considered as part of the ongoing Scheme design and hydraulic modelling has been used to identify if any hydrological changes are likely to occur which could affect the SAC. This will be reported in the ES and via the HRA.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
outside of the study area.			<p>The study area for the HRA follows guidance in DMRB LA 115,,which outlines that the screening stage of HRA shall be completed for all internationally important wildlife sites where a route corridor or project meets any of the following screening criteria’:</p> <ul style="list-style-type: none"> <li>a. is within 2 km of an internationally important wildlife site or functionally linked land;</li> <li>b. is within 30 km of SACs where bats are noted as one of the qualifying interests;</li> <li>c. crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as an internationally important wildlife site;</li> <li>d. has a potential hydrological or hydrogeological linkage to an internationally important wildlife site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers the assessment of internationally important wildlife sites; or</li> </ul>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			<p>e. has an affected road network (ARN) which triggers the criteria for assessment of internationally important wildlife sites’.</p> <p>There is a pathway by which hydrological impacts might occur on internationally important wildlife sites upstream (in relation to tidal flow) or downstream of the point at which the Scheme crosses the River Arun, therefore the following sites are also included in the HRA (Arun Valley SAC, SPA and Ramsar site and Solent &amp; Dorset Coast SPA).</p>
General	Main Letter - Table	Further clarity of how tranquillity will be assessed should be provided: either as part of the landscape assessment and/or part of noise and vibration. Receptors for tranquillity should also include those using woodland and Rights of Way users.	Identification of potentially noise sensitive receptors includes consideration of public open spaces and impacts on these areas will be reported in the Noise and Vibration chapter of the ES. Tranquillity will also be considered through the Landscape and Visual ES chapter, this will include receptors across the landscape and visual study area including PRow users.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
In-situ preservation	Main Letter - Table	Reference should be made to impacts around in situ preservation (for example, in relation to archaeology) from changes in soil saturation, water management etc. during and post construction. Water monitoring should be included in the archaeological mitigation strategy, to demonstrate whether viable preservation conditions will be present after development or land-use change.	Impacts to the archaeological resource arising from changes to the water table and soil saturation will be considered in the ES and appropriate mitigation will be presented where required.
Likely Effects	Main Letter - Table	We would like to see reference to the introduction of vehicular movements in the landscape. We would also wish to see the removal of 'local'.	Introduction of vehicles on the Scheme will be referred to at an appropriate scale within the ES in relation to potential landscape and visual impacts.
General	Main Letter - Table	Please include reference to the updated WSCC Minerals Plan, which is due to be published w/c 30 March 2021. The SDNPA plan jointly with WSCC in terms of Minerals and Waste for the National Park area.	Local minerals and waste policy, including the adopted soft sand review, will be addressed in the Material Assets and Waste chapter of the ES.
Settlement Pattern and Infrastructure	Main Letter - Table	We recommend the applicant amend to the following: "Across this part of the SDNP, the settlement pattern..."	Noted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Significance of Effects	Main Letter - Table	We note that table 18 sets out a significance matrix to guide professional judgement. We also note in paragraph 8.8.20 that where the effect could be one degree or another, professional judgement will be used to determine the significance of effect. We would suggest that professional judgment provides a commentary on where the effects lie within the spectrum between the two categories. To do otherwise runs the risk of downplaying or overstating effects. We therefore recommend that the wording in the table is changed from for example ‘moderate or large’ to ‘moderate to large’.	Professional judgement will be justified in the ES.
Visual Value	Main Letter - Table	Within Table 14, reference should be made to important views including those identified in the Viewshed Study, including key landmarks that contribute to the Special Qualities, and sequential views from long distance routes that are focussed on the landscape.	Promoted views defined as designated landscape or locations covered in guidebooks, tourist attractions, policy or published management strategies have been considered. The Viewshed study has been used to assist in selecting viewpoints. Sequential views have been included in the methodology.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Designations	Main Letter - Table	Reference should be made to the de-trunking works, which are within the SDNP.	Reference to the de-trunking part of the Scheme within the SDNP is included in the Landscape and Visual PEI Report chapter.
Public Rights of Way	Main Letter - Table	We would request that reference be made to the rural lanes within the study area, which are extensively used for recreation.	Rural lanes are referred to within the Landscape and Visual PEI Report chapter and will also be within the ES.
Arboricultural Study Area	Main Letter - Table	We would welcome the opportunity to comment further as the scheme develops.	Statutory consultation is due to commence in January 2022, which will provide the opportunity to comment further on the Scheme design.
The River Arun crossing	Main Letter - Table	We consider that the installation of a bridge over the River Arun will have direct impacts, particularly on the migration of species and should therefore be included in all the proposed surveys	Surveys of the River Arun have been undertaken.
Land use	Main Letter - Table	The land both within the SDNP and to the south of the boundary (through which the route will pass) is considered to have a predominantly rural character, despite a higher incidence of development further south. Reference should also be made to the pattern of arable and pasture	The baseline description of the landscape to be provided in the PEI Report and the ES takes these elements into account.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		land use, scattered rural villages and farmsteads, intimate hidden valleys and winding lanes.	
Archaeological mitigation	Main Letter - Table	In addition to focussing on excavation and recording of remains, mitigation should also include opportunities to better understand paleo-environmental and geo-archaeological significance.	The DBA will include a geoarchaeological assessment, which includes paleo-environmental and geo-archaeological significance, and refer to a deposit model being developed based on the results of ongoing Ground Investigation works and a programme of geoarchaeological geophysical survey. This will provide new information on the location and significance of these deposits and inform the development of appropriate mitigation.
Landscape Susceptibility	Main Letter - Table	Table 11 makes little distinction between the moderate and low categories. We suggest that moderate should state “Landscape able to accommodate some limited change” to help make the distinction.	The definitions will be considered in the final methodology to be presented in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Data availability	Main Letter - Table	<p>It would be useful to know what data was assessed for the purposes of the Scoping Review, whether this was limited to publicly accessible data sets or data sets provided by consultees in the process (i.e. WSCC HER data as a minimum etc.).</p> <p>There should be acknowledgement that the site walkover may result in a more complete and up to date set of baseline data to use as the basis for the impact assessment and for informing the development of mitigation measures are recommended.</p>	The EIA Scoping Report was based on HER data obtained under licence from WSCC. The DBA and ES will similarly be informed by the HER as well as other relevant sources. A site walkover has been completed, the results of which will be included in the DBA and ES.
Potential measures for reducing or offsetting effects on important ecological features	Main Letter - Table	Make specific mention of de-trunking the existing A27 between Crossbush and Tye lane in the scoping document and the opportunities this provides. Also specifically mention quality green bridges as one of the key potential measures that will be considered for reducing or offsetting effects on important ecological features.	The ES will describe the de-trunking of the A27 and will set out how the Scheme has incorporated design measures to avoid and minimise impacts on ecological features where possible. The ES will outline any additional mitigation and compensation measures to be adopted, including green bridges.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Likely landscape and visual effects	Main Letter - Table	<p>Please add reference to ‘new highway structures across Binsted and Tortington Rifes’ under the second bullet point.</p> <p>We would also like to see a point specifically referencing effects on the purposes of SDNP designation. Additionally, the last bullet point should be adjusted to consider night-time effects from additional light sources and effects on SDNP dark night skies.</p> <p>Other effects that should be considered under this heading include:</p> <ul style="list-style-type: none"> <li>• Effects on topography</li> <li>• Effects on open agricultural land</li> <li>• Effects on recreation and enjoyment</li> <li>• Cumulative effects with other road infrastructure in the area.</li> </ul>	<p>The ES will directly refer to the SDNP designation, its special qualities and dark skies in relation to potential landscape and visual impacts of the Scheme.</p> <p>The likely effects on topography, open agricultural land, recreation and enjoyment and cumulative effects with other relevant road infrastructure will be considered within the ES.</p>
Field surveys and habitat connectivity	Main Letter - Table	<p>We welcome the comprehensive list of surveys. However as habitat connectivity is of such significance, a further piece of work that maps habitat connectivity and potential impacts should also be provided (which includes veteran/ancient trees and hedgerows).</p>	<p>The ES will include a figure which shows the location of ancient woodlands and identified veteran trees. The ES will outline mitigation measures to retain habitat connectivity which will be shown visually in the Landscape and Environment Masterplan.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Potential impacts - bats	Main Letter - Table	The impact of lighting on bats (foraging and roosting) could be significant and should be taken into account for both the construction and operation stages.	The ES will include an assessment of the potential for significant effects of lighting on bats during construction and operation of the Scheme.
Degradation of priority habitats through alterations in hydrology (including water quality) or air quality.	Main Letter - Table	There is potential for degradation of priority habitats due to fragmentation and alterations in hydrology – it will be important to understand those impacts in order to avoid/minimise them and to propose mitigation measures.	The ES will include indirect impacts from the Scheme, which will include potential degradation and fragmentation of habitats.
Reference to other studies	Main Letter - Table	We would wish to see reference to Historic Landscape Characterisation in the assessment of landscape effects as well as coordination between the assessment on Cultural Heritage assessment and Landscape. This is an important part of understanding the landscape baseline and in developing appropriate mitigation.	The Historic Landscape Characterisation will be included in the heritage DBA to be appended to the ES and impacts to sensitive landscapes will be considered in the Cultural Heritage chapter of the ES. These will be cross referenced with the Landscape and Visual ES chapter.
Viewpoint Locations	Main Letter - Table	We note the groups of visual receptors in Table 9 and would suggest the following are added: <ul style="list-style-type: none"> <li>• Residents – Crossbush and Lymister, Broomhurst Farm and Torrington Place.</li> </ul>	The initial viewpoint location selection for the Landscape and Visual PEI Report chapter includes additional visual receptors and takes into account the published study set out in the

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<ul style="list-style-type: none"> <li>• Recreational Users – Long distance recreational routes and minor lanes also used for recreation. We would also request that representative viewpoints reflect views from the various local character areas affected as well as demonstrating coordination with heritage receptors such as Arundel Castle. We also believe it is imperative the viewpoints are selected with reference to the South Downs Views Assessment (2015) both in terms of views into and out of the National Park and in association with key landmarks (Arundel Castle Landmark 18).</li> </ul> <p>We would expect the previously identified viewpoints shown on Figure 7-10 (2019) to form a good starting point for identifying receptors, but we would also wish to see included:</p> <ul style="list-style-type: none"> <li>• Elevated views looking east from Priory Lane</li> <li>• Additional views from Monarch’s Way south of the preferred route to consider sequential views</li> </ul> <p>We would like to see effects on Long Distance Routes assessed separately, with a description of effects on sequential views (e.g. Monarch’s Way).</p>	<p>comment. Such viewpoints will be further consulted on and refined through field work prior to production of the ES. A ZTV was produced to help inform the viewpoints included within the PEI Report.</p> <p>The views of users of long distance routes will be assessed in the ES with reference, where appropriate, to sequential viewpoints, including users of Monarch’s Way.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Assessment Methodology	Main Letter - Table	<p>At 8.8.3, an assessment of whether the proposed scheme furthers the purpose of designation should also be carried out, rather than just assessment of the Special Qualities. 8.8.4 refers to tranquillity but provides no detail of how this will be assessed or considered. Further detail is therefore required. See also comments below on Chapter 12.</p> <p>The assessment of effects should also refer to the Heritage Assessment and the SDNP Views study.</p>	<p>The Landscape and Visual PEI Report chapter refers to the SDNPA views study and the Cultural Heritage PEI Report chapter covers the heritage assessment. The purposes of the SDNP designation and special qualities, inclusive of tranquillity, will be referred to within the ES.</p>
Landscape Character Baseline	Main Letter - Table	<p>The applicant should please reference and use the latest version of the SDNPA's Landscape Character Assessment (2020) – available online, and note there have been some changes in terms of the typology relevant to this location. We would also wish to see reference to Historic Landscape Characterisation, in accordance with NPSNN para 5.145. The study area demonstrates a variety of time-depth and continuity of patterns. We would welcome the opportunity to comment on the definition of Local Landscape character areas prior to their use in the LVIA.</p>	<p>The latest SDNP Landscape Character Area will be referred to. Cultural heritage will respond to the Historic Landscape Characterisation in detail and it will be referred to within the Landscape and Visual chapter of the ES. There will be opportunity to comment on the local landscape character areas within the PEI Report.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Likely significant effects on ecological features	Main Letter - Table	We would just comment that the list of significant adverse effects upon important ecological features is substantial.	The list presented in the EIA Scoping Report highlighted the potential significant environmental effects before further design work and mitigation. The design of the Scheme is an iterative process and significant adverse effects will be addressed through the mitigation hierarchy. However, it is acknowledged that there may be residual significant adverse effects that cannot be fully compensated for, such as the loss of veteran trees.
Specific landscape and visual mitigation	Main Letter - Table	<p>Given the potential for new structures such as viaducts and bridges, we would like to see consideration given to colour, form and materials. Further, we would expect mitigation to include habitat creation that reflects and reinforces local character.</p> <p>Any proposals for new tree planting in relation to the scheme or as part of wider enhancement proposals should also pay due diligence to historic environment impacts (right tree, right place).</p> <p>We also request that the red line boundary to the</p>	The materials and design of new structures and mitigation measures throughout the Scheme will be detailed within the ES and on the Landscape and Environment Masterplan, including the detailed consideration of responding to the local landscape character context. Essential mitigation will inform the Order Limits boundary for the Scheme. The potential beneficial impacts of the Scheme will be fully considered within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>scheme is not set until mitigation measures are developed to ensure that they can be implemented at a landscape scale and not restricted to a narrow corridor along the route of the road. If this were not possible, we would request that provision be made for off-site mitigation.</p> <p>We would advise the development of mitigation measures which are grounded in an understanding of the special qualities of the National Park and local areas and which seek not just to minimise the adverse effects, but also actively seek enhancement of the landscape and special qualities including through the reduction in existing effects of road infrastructure on the National Park. Therefore, we would wish to see an assessment of the positive measures that could be implemented in relation to the de-trunking of the existing A27, where it cuts through the National Park, and for opportunities to improve connections and recreational experiences.</p>	

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Landscape Value	Main Letter - Table	<p>No reference is made to the criteria used to assess landscape value. We would expect some description of the method to be used to define the value of the landscape outside of the SDNP, especially given its role as a setting to both the SDNP and Arundel Castle.</p> <p>Reference should also be made to GLVIA box 5.1 and the recent Landscape Institute publication (Landscape Value and Valued Landscapes, A Technical Guidance Note, Consultation Draft 02/21).</p>	<p>The methodology for the LVIA is informed by DMRB LA 107 guidance and GLVIA 3. These will be referred to, including reference to landscape value. The ES will also make reference to the Landscape Institute's TGN 02/21. Criteria used to assess landscape value will be given within the ES.</p>
Scheme design	Main Letter	<p>We also welcome environmental net gain (para 4.4.9) but again would not limit baseline assessments to biodiversity but would also expect, for example, landscape and recreation to all feed into the design of the scheme and deliver multi-functional benefits. Opportunities to deliver mitigation in combination with other proposed / existing schemes should also be considered.</p>	<p>The multi-functionality of environmental mitigation has and will be considered and utilised where appropriate. The PLEM has considered the local landscape character and opportunities for connectivity with adjacent land/schemes.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Night-time Effects	Main Letter - Table	Whilst reference is made to a night-time visual assessment for residents and recreational users within the SDNP, all other users are scoped out. We do not consider this acceptable not least because of important views towards Arundel Castle (which is lit at night) from locations outside of the Park and the extent to which these views contribute to the appreciation and enjoyment of the Park.	The night-time assessment will include appropriate locations, including those within and outside the SDNP if considered to be required.
Designations (International Dark Skies Reserve – IDSR)	Main Letter - Table	Whilst reference is made to the IDSR, we are of the view that the significance has been downplayed. Part of the study area is within Zone E1A: Intrinsic Zone of Darkness, where the SDNPA’s Technical Advice Note (TAN) states, “Although these areas are consistently brighter than the core and buffer areas, as skies of sufficient IDSR quality, they remain of value to protect and distinguish from other areas of the park that are brighter”. Please see appendix 1 for a map showing the relevant zones. The significance of dark skies in this location therefore needs to be considered more fully. Further, the SDNPA Dark Night Skies TAN should be referenced in the chapter.	The potential landscape and visual impacts of the Scheme on the IDSR will be further investigated through field work to inform discussion within the ES. The SDNP Authority TAN is referred to within the Landscape and Visual PEI Report chapter and will be further explored within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Mitigation	Main Letter	We welcome the consideration of a tailored approach to mitigation and development of an environmental masterplan as set out in para 4.4.5. However, to effectively achieve this we would expect detailed surveys of landscape, hydrology and cultural heritage as well as biodiversity to inform the proposed scheme design (para 4.4.6).	The production of the Preliminary Landscape and Environment Masterplan (PLEM) presented in Figure 2-1 of the PEI Report has involved input following detailed surveys from the relevant disciplines, including hydrology and cultural heritage.
WCHAR	Main Letter - Table	Ensure scope of WCHAR is widened to include network connectivity, historic severance, potential to address severance through reconnections and scope for avoiding severance and scope for securing higher rights on paths – e.g. upgrading of footpaths to bridleways to facilitate access for a wider range of users.	The scope of the WCHAR is defined in DMRB GG142 and includes observations on network connectivity and historic severance and identifies opportunities to address historic severance. All new instances of severance are addressed within the Scheme design.
South Downs National Park – Special Qualities	Main Letter	We welcome the acknowledgement in the objectives that the scheme will “respect the SDNP and its special qualities in decision making” and “deliver a scheme that minimises environmental impact and seeks to protect and enhance the quality of the surrounding environment through its high-quality design”. However, we would like to see these objectives strengthened to reflect the duty of public bodies to have regard to the	The special qualities of the SDNP will be addressed within the ES, specifically by assessing them in relation to identified local landscape character areas. Other aspects of the SDNP will also be addressed, including its designation as an International Dark Skies Reserve and objectives within the SDNP Partnership Management Plan.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>statutory purposes of designation. Namely to:</p> <ul style="list-style-type: none"> <li>• Conserve and enhance the natural beauty, wildlife and cultural heritage; and</li> <li>• Promote opportunities for the understanding and enjoyment of the special qualities of National Parks by the public.</li> </ul> <p>We would like to see this reiterated when the South Downs National Park (SDNP) is mentioned in para 2.3.4. In particular, we would stress that the SDNP is a nationally recognised landscape designated for its natural beauty and opportunities for open-air recreation.</p>	
SDNP Special Qualities	Main Letter	<p>We note the SDNP special qualities assessment was carried out as part of the Stage 2 Route Options as set out in paras's 5.5.11-5.5.12. We welcome ongoing engagement to ensure the special qualities are considered as part of Stage 3 design development. We request a more detailed consideration of the National Park special qualities within the study area as part of the LVIA to ensure that the design of the route and optimisation of mitigation takes these qualities into account.</p>	<p>The Special Qualities of the SDNP will be further considered within the ES and the Landscape and Environment Masterplan.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Landform and hydrology	Main Letter - Table	Reference should be made to the raised flood embankments, which are a key landform in the otherwise flat floodplain. Reference should also be made to the gently rising land that defines the valley sides of the Arun to the south of Arundel.	The topography of the landform is described within the Landscape and Visual PEI Report chapter, as well as in Figure 7-6 of the PEI Report.
Broad Green Waste Common Land	Main Letter - Table	Correction: the registration of this parcel of land CL211 was much earlier and the details pertaining to its registration are held by the Registration Authority, which is WSCC.	Noted
PRoW connectivity	Main Letter - Table	As frequency of use is unlikely to yield much useful information, it is recommended the baseline assessment also considers connectivity of each PROW with the wider rights of network and also captures evidence of any historic network severance for example that caused by earlier road schemes which may have impacted on use by walkers, cyclists and horse riders.	Noted
Community land and assets during construction	Main Letter - Table	We agree with the need to assess access to community assets. We would advise investigation of any extant Commoners rights, and note statutory processes required under	Noted

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		Commons Act 2006 in relation to consent for works on registered commons.	
General	Main Letter	<p>This paragraph describes the scheme as lying outside of the SDNP boundary; however, the scheme also includes de-trunking of part of the existing A27, which lies almost wholly within the National Park.</p> <p>Whilst the new road is primarily adjacent to the SDNP boundary, we would also describe it as falling within the setting of the National Park. National Policy Statement for National Networks (NPSNN) para 5.154 states that development outside nationally designated areas which might affect them should be considered against the purposes of designation.</p>	<p>This is made clear in the PEI Report.</p> <p>The preferred route was designed to remain outside of the SDNP as far as possible, which is an important consideration in planning policy terms. However, the Eastern end of the Scheme proposals, which was common to all the routes considered at the time of the Preferred Route Announcement, cannot be constructed without some minor incursions into the National Park. This is, primarily, related to works within the existing highway boundary of the A27 and are a direct consequence of the need to connect the new route with the existing highway infrastructure. In addition, some minor incursions are required to provide habitat enhancements in line with the statutory purposes of the National Park designation. These incursions are minor in nature.</p> <p>The NPSNN and potential impact on the SDNP will be addressed within the ES.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Table 21 Protected and Notifiable species within the study area.	Main Letter - Table	Table should be updated to reflect that Toads are known to be present – large numbers use Madonna Pond for breeding every year.	This will be added into the EIA process.
Post-construction heritage asset impacts	Main Letter - Table	It is recommended that the applicant make clear that there will be additional impacts caused to the setting of heritage assets post- construction, in the long term.	This will be considered within the assessment to be presented in the ES.
Visual Susceptibility	Main Letter - Table	Reference should be made to uninterrupted sequential views as well as transient views.	This will be included in the methodology, which will be presented in full in the ES.
Relevant Policy Local policies to be considered	Main Letter - Table	National policy should include recent government strategy for cycling Gear Change and also LTN1/20 design guidance for cycling infrastructure as this will be relevant for mitigation proposals. WSCC Walking and Cycling Strategy should also be included.	This will be included within the ES.
Severance / accessibility	Main Letter - Table	Whilst we agree with the proposed scope, we would advise including Public Rights of Way under Human Health, as receptors for severance impact.	This will be reported in the ES accordingly.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Tranquillity	Main Letter - Table	We do not agree that around the boundaries of the SDNP, tranquillity is 'low'. There are areas where higher levels of tranquillity exist within the study area and we would expect these variations to be identified. For the purposes of the LVIA, we would request LCA descriptions and fieldwork to be relied upon, to inform a local assessment of tranquillity. We would also expect reference to the prevailing wind in the study area, which is likely to carry noise of traffic on the proposed route into the SDNP. Please also see comments on Chapter 12 below.	Tranquillity will be further informed by upcoming field work and explored further within the ES, with reference to prevailing wind and the Noise and Vibration chapter as appropriate, especially as tranquillity forms one of the seven Special Qualities identified for the SDNP. The "low" rating is taken from published guidance.
<b>Slindon Parish Council</b>			
Road surface	Main Letter	We ask that the choice of a road surface which ameliorates noise pollution for people living and working near the new Bypass will be considered as essential. The new Open Graded Friction Course (OGFC) which is an asphalt mix and is more porous has been revealed to cut noise by 8 decibels. It is used extensively in the USA and perhaps might be a good option.	Low noise road surfacing will be considered as a key mitigation measure to be included as part of the Scheme.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Construction	Main Letter	The road construction must seek to be as aesthetically pleasing as it can be, as unintrusive as possible in terms of noise and visual impact, adapted to the environment and less damaging to habitats.	Mitigation measures for the construction phase dust and plant emissions, visual impacts and biodiversity impacts will be identified within the relevant ES chapters and incorporated within the first iteration Environmental Management Plan (EMP) for the Scheme.
SDNP Special Qualities	Main Letter	Distinctive towns and villages, and communities with real pride in their area is another special quality of the South Downs National Park and the busy A27 corridor which will skirt the South Downs National Park must be managed with sensitivity and maintain a 'sense of place'. It provides the ideal opportunity to deliver a highways scheme which incorporates environmentally friendly features.	The design of the Scheme has been progressed with landscape and environment as a key focus. The Special Qualities of the SDNP will be addressed within the ES.
Need for scheme	Main Letter	In the light of shifting working practices with many more people now working from home the current project should surely be put on hold and avoid a scheme which isn't actually needed or indeed wanted.	The need for the Scheme will be clearly set out in the DCO application and will be summarised within The Scheme ES chapter.
Traffic flows	Main Letter	Shellbridge Road is linked to Walberton and meets the B2233 at Yapton. We would like to	The southern junction of Shellbridge Road adjoining the existing A27 will be revised as

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		preserve it as a quiet rural road where wildlife can be seen and enjoyed rather than a speedy rat run to the A29.	part of the A27 de-trunking strategy. The rural character and existing wildlife will be reviewed and retained where possible as a key focus to the emerging proposals.
Traffic flows	Main Letter	Slindon Parish Council believes that the construction will merely shift the bottleneck at peak times from Arundel to its own doorstep in Fontwell and create environmental issues both during and after construction.	The traffic model will calculate the movement of operational traffic in and around the Scheme. The environmental effects associated with any changes in terms of traffic during construction and operation will be presented within the ES.
Alternatives	Appendix 1	HE have not discussed how the grey route was ultimately chosen and what environmental benefits it has over the alternatives. HE should consider the “Arundel Alternative”, as well as tunnelled and cut and cover solutions for part of the route, particularly where major adverse effects are predicted on receptors, these include effects on heritage e.g. the 12th century St Mary’s Church, Binsted, and effects on communities with the villages of Binsted and Walberton being physically divided by the proposed bypass.	A summary of the reasonable alternatives to the Scheme are outlined within Chapter 3: Assessment of Alternatives of the PEI Report and will be further discussed within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
<b>Walberton Parish Council</b>			
Binsted Church and churchyard	Appendix 1	Reference that no community facilities are located directly alongside the route is incorrect. HE have failed to refer to Binsted Church and churchyard, which are directly alongside the route.	Noted. The Church of St Marys, Binsted, and the recent increase in designated status are considered in the PEIR and will be considered and reported accordingly in the ES.
Avisford Park Golf Course	Appendix 1	Reference is made to proposed scheme crossing the boundary of Avisford Park Golf Course, whereas it actually runs through the golf course on both sides of Yapton Lane.	Acknowledged, to be referenced accordingly in the ES based on the extent of the Scheme's interaction with this resource.
Binsted Nursery	Appendix 1	Reference is made to Binsted Nursery being 200m from the proposed scheme, whereas part of the nursery is within the red line boundary of the proposed scheme.	Acknowledged, to be referenced accordingly in the ES.
Binsted	Appendix 1	HE state that the proposed scheme runs south of the village of Binsted, whereas it actually runs through it.	Acknowledged, to be reported accordingly in the ES.
Binsted	Appendix 1	Incorrect reference to Binsted Road being crossed by the scheme, which should read "Binsted Lane".	Acknowledged, to be reported accordingly in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Properties in Fontwell, Slindon, Crossbush and Lyminster	Appendix 1	There is a failure to mention residential properties in Fontwell, Slindon, Crossbush and Lyminster when referring to potential sensitive receptors within 600m of the boundary. There is a failure to mention other sensitive receptors. Fields in Binsted are home to rare breed sheep. It is well documented that sustained traffic noise can have detrimental effects on farm and wild animals, and wild birds, resulting in lower growth rates, a deterioration of feed efficiency and other detrimental effect on some biological functions.	All potentially noise sensitive receptors within the final study area, including all those within 600m, will be considered in the ES and the impact of noise and vibration on wildlife will be considered in the Biodiversity chapter of the ES.
Visual impact during the night-time	Appendix 1	The assessment of visual impact during the night-time will use the same study area as the daytime assessment, even though the light emanating from the proposed scheme at night will be further reaching than the visual impact of the proposed scheme during the daytime. A different spatial scope is required.	Appropriate locations for the night-time assessment will be further refined through field work and professional judgement.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Air quality receptor	Appendix 1	HE have not included the Avisford Grange housing development as a receptor for air quality, despite its close proximity to the proposed scheme, existing residents, and large number of future residents.	As set out in DMRB LA105 guidance, receptors included within the air quality assessment will be selected based on their location being within 200m of the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area will be included within the assessment. On this basis Avisford Grange will be included as a receptor within the ES.
Air Quality receptor	Appendix 1	Previous assessments have failed to identify receptors at Walberton C of E Primary School and 2 pre-school. These should be included in future assessments.	As set out in DMRB LA105 guidance, receptors included within the air quality assessment will be selected based on their location being within 200m of the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area will be included within the assessment. On this basis worst case locations at Walberton C of E Primary School and 2 pre-school will be included as receptors within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Air quality receptor	Appendix 1	Walberton Recreation Ground is a public park that was not assessed as a sensitive receptor previously. It should be included in future assessments.	As set out in DMRB LA105 guidance, receptors included within the air quality assessment will be selected based on their location being within 200m of the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst-case locations in an area will be included within the assessment. Where the risk of impacts being significant is identified, additional receptors in that area will be considered to ensure that the determination of overall significance is completed in line with DMRB guidance. The receptors that will be considered include residential locations, nursing homes, schools and healthcare facilities as appropriate. Public open spaces are not typically considered in air quality assessments unless there are specific reasons to do so, such as concern over very poor air quality, where short term air quality objectives could be exceeded (e.g.1-hour NO2 air quality objective) and there is relevant exposure. This is not the case for this location and so this receptor will not be included as a specific receptor. However, there will be other

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			relevant receptors modelled in this area that can be utilised to understand air quality in the area including at the Walberton Recreation Ground.
General	Appendix 1	HE have only referred to “Binsted Wood” when the Binsted Woods Complex local wildlife site includes Binsted Woods and Tortington Common.	Binsted Woods complex is referred to within the Landscape and Visual PEI Report chapter.
Walberton Parish Council	Appendix 1	HE should consult with Walberton Parish Council when assessing areas that will require an operational phase noise assessment; they are not referred to as consultees in the Scoping Report.	Consultation will be undertaken on this topic with Arun District Council, who can present the views of Walberton Parish Council as required. There will also be the opportunity to provide feedback through the planned consultation events.
Binsted Woods Complex	Appendix 1	HE’s Scoping Report fails to grasp the importance of the Binsted Woods Complex to local wildlife. The Complex is a great foraging location and bats can travel up to 15km per night to forage there. HE need to establish the importance of the complex and its surrounds to bats commuting from the wider area to the south and the west as the road will act as a significant barrier and HE need to assess how the bat species in Binsted	Detailed bat surveys including crossing point surveys and radio tracking surveys have been undertaken in 2021. The data is being analysed and will be reported within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		Woods, that depend on a diet associated with wetland habitats, will access these habitats.	
Mortality of species during the operational phase	Appendix 1	HE have recognised the risk of accidental mortality of barn owls during the operational phase. However, it is known that many species of animals including (but not limited to) badgers, birds, hedgehogs, bats, reptiles, toads and invertebrates are routinely killed by traffic. HE have not scoped these risks into their report, or how they will prevent/mitigate these deaths.	Measures to reduce the risk of animals accessing the road such as fencing will be assessed and included within the design where such measures are considered necessary. Animals will also be guided to the proposed underpasses and green bridges, allowing for safe passage across the road.
Walberton village landscape	Appendix 1	There is no mention in the scoping report of the change in the Walberton village landscape as a result of the increase in traffic caused by the proposed scheme, despite mention of how the Arundel landscape will change due to decrease in traffic.	Potential landscape and visual impacts associated with the increase and decrease of traffic as a result of the Scheme will be further referred to within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Binsted Rife Priory Farm	Appendix 1	Table 25 includes “Binsted Rife Priory Farm, 50m north of the proposed scheme”. Binsted Rife (a stream that runs along the valley between Binsted and Walberton) is not located on or near Priory Farm. Clarity should be provided as to which location the spray irrigation licence applies to.	Priory Farm is not referenced in the PEI Report. Abstractions are listed in Tables 9-4 and 9-5.
PM2.5	Appendix 1	The Scoping Report expressly scopes out emissions of PM2.5 but no detailed reasoning is given. Measurements of air quality regularly incorporate PM2.5 levels and so, without adequate reasoning, these should be assessed as part of the proposed scheme. PM2.5 can have serious effects on health.	As set out in the EIA Scoping Report within paragraph 6.8.4. .. <i>“PM<sub>2.5</sub> will not be assessed with air quality modelling as it is not a requirement of DMRB LA 105. The UK currently meets its legal requirements for the achievement of the PM<sub>2.5</sub> air quality thresholds and the modelling of PM<sub>10</sub> can be used to demonstrate that the Scheme does not impact on the PM<sub>2.5</sub> air quality threshold. Baseline data in the approximate area of the previous TRA also indicates PM<sub>2.5</sub> concentrations are well within the relevant air quality objective.”</i> To provide further detail, the monitoring referred to in paragraph 6.8.4 is the PM <sub>2.5</sub> concentration monitored at Worthing Grove Lodge/Lyons Farm AQMA, which in 2018 was 10µg/m <sup>3</sup> compared to an objective of 25 µg/m <sup>3</sup> (See paragraph 6.4.8. of the EIA Scoping report). This is 60% lower

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			<p>than the air quality objective for PM<sub>2.5</sub> of 25 µg/m<sup>3</sup>, before any further improvements in air quality occur in the future due to anticipated improvements in vehicle emissions and background sources of pollution. As the air quality assessment within the ES will focus on the significance of pollutant concentrations that are in excess of objective values this monitoring shows that PM<sub>2.5</sub> quantitative assessment is not required, as PM<sub>2.5</sub> concentrations are so low in the anticipated study area, even within poorer locations of air quality, such as an AQMA. However, as also set out in EIA Scoping Report paragraph 6.8.4 PM<sub>10</sub> concentrations will be presented in the ES to re-confirm that this position is correct for PM<sub>2.5</sub>. This approach can be adopted as PM<sub>2.5</sub> (particulates with a diameter of 2.5µm or less) is contained within the larger PM<sub>10</sub> (particulates with a diameter of 10µm or less) size fraction. This approach is in line with the policy test within the National Networks National Policy Statement (NNNPS) for air quality which focuses on the significance of effects for concentrations of pollutants above air quality thresholds.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Cumulative effects	Appendix 1	HE have focussed on each species individually but they have failed to take into account the cumulative impact the scheme will have on the many protected species within the area.	The ES will include an assessment of cumulative effects in accordance with DMRB LA 104.
Birds	Appendix 1	HE have not considered the numerous rare and declining species of bird and how the noise of the proposed scheme will affect their ability to hear each other call and ability to hear predators.	The ES will include an assessment of the potential for significant effects on birds from construction and operation of the Scheme.
Priority Species	Appendix 1	HE have failed to include in their scope several priority species, including toads, hares, hedgehogs and harvest mice. These are all declining nationally and are all located within the area of the proposed scheme.	The ES will include an assessment of the potential for significant effects on protected and notable species from construction and operation of the Scheme.
Landscape and visual impacts on the Sussex villages	Appendix 1	No reference is made to the landscape and visual impacts on the Sussex villages in particular, the ancient village of Binsted, or Walberton, as a cumulative impact, rather than the impact on individual views or properties comprised within the villages.	The ES will refer to all receptor groups and cumulative impacts.
General	Appendix 1	HE have not included either existing or the future properties as part of the Avisford Grange development.	The Landscape and Visual chapter of the PEI Report refers to the Avisford Grange

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			development and the ES will further address this as future receptors.
General	Appendix 1	Incorrect reference to the route crossing south of Binsted, whereas the route runs through Binsted.	The Geology and Soils chapter of the PEI Report does not describe the route. The latest description of the route is provided in The Scheme chapter of the PEI Report.
General	Appendix 1	HE have noted that Public Right of Way footpath no.350 between Walberton and Binsted crosses the proposed scheme corridor, as does bridleway no.392 to the north-west of Walberton, but it fails to mention that footpath no.341 that connects Binsted Lane to the South Downs National Park is cut off as a consequence of the raising of Binsted Lane.	The Scheme alignment would not sever PRow route 341. Any visual impacts experienced by people walking on the route will be reported in the ES. Such impacts will be avoided or mitigated where possible.
Severance	Appendix 1	HE recognise the impact that the construction phase will have on the severance of communities but no mention has been made of the operational phase, which also needs to be scoped in. Intra-project effects need to consider that a quiet peaceful countryside area that include historic villages and tight knit communities will become severed by the presence of the A27 bypass and associated viaducts, and will become dominated	The scope includes consideration of severance both during construction and operation of the Scheme. The PEI Report, and ultimately the ES, will report all the alternatives considered by National Highways.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		by the presence of these urbanising features and the lack of quiet and peace that once existed. Tunnelled and cut and cover solutions should be considered for the bypass in these locations	
Listed buildings	Appendix 1	No mention is made of the ancient village of Binsted, which has 9 Grade II listed buildings (8 houses and St Mary's Church), an archaeological notification area, a Roman Road, Moot Mound, and was vitally important in the life story of Laurie Lee whose poems were inspired here.	The village of Binsted will be included in the assessment as a non-designated heritage asset. This includes any historic interest it might have through literary associations. The individual listed buildings will be considered in accordance with their significance.
Walberton Neighbourhood Plan	Appendix 1	HE have failed to take into account the Walberton Neighbourhood Plan as part of the suite of policy that will be considered by the Secretary of State. The Walberton Neighbourhood Plan is part of the local development plan, adopted March 2017. A revised Neighbourhood Plan is going to referendum on 6 May 2021 and should be taken into account as an emerging policy. There are important policies including those relating to	The Walberton Neighbourhood Plan will be taken into account in the ES and considered as part of the assessment as a material consideration in planning.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		heritage/archaeology in the Neighbourhood Plan which should be considered.	
General	Appendix 1	Incorrect reference is made here to Walberton as a settlement, when it is in fact a village.	This comment is noted for future reports.
Walberton C of E School	Appendix 1	The Scoping Report states that Walberton C of E School is within 600m of the boundary study area. This underplays the effect of the route on Walberton C of E School, which is less than 200m from the grey route. HE are also asked to note the current location on the school, the old school was demolished 13 years ago and is shown incorrectly on HE's plans. See plan below, showing the correct location of the school.	This is acknowledged and the current location of the school will be considered as a noise sensitive receptor in terms of noise and vibration in the further assessment work.
Mitigation	Appendix 1	Mitigation has been proposed in the form of overbridges on Tortington Lane, Binsted Lane and Yapton Lane. The Binsted Lane overbridge is over 7m high and has an oppressive effect on the houses/community below. The Binsted Lane	This will be considered as part of the Scheme design. The potential landscape and visual impacts of such elements of the design will be fully assessed in the landscape and visual impact assessment reported in the

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		overbridge does not have sufficient ramps and tie-ins and some fields are consequently made inaccessible. The connectivity needs to be fully assessed before this overbridge can be put forward as a mitigation measure. Tunnelled and cut and cover solutions should be considered for the bypass in these locations.	Landscape and Visual ES chapter, with mitigation provided where feasible and appropriate.
Non-exhaust emission	Appendix 1	HE have failed to take into account non-exhaust emissions, such as those from tyres and brakes. These should be considered as part of the air quality assessment.	Tyre and brake wear are included within the emission factors generated by the speed band emissions factors tool that will be utilised in the air quality assessment in line with DMRB LA105 guidance. Therefore, these emissions will be accounted for within the air quality assessment.
Listed buildings	Appendix 1	While Highways England (“HE”) incorporate the listed buildings in the area into their scope, they fail to mention the many buildings or structures of character that are listed locally by the local planning authority. There are four locally listed buildings in Binsted. These are the Old Rectory, Grove Lodge, Bramble Barn and the Black Horse Pub. The Old Rectory is 100m from the grey route, the Bramble Barn is less than 200m and the Grove Lodge is approx.. 200m. The Black	Whilst only designated assets were specifically identified in the EIA Scoping Report, the full assessment to be presented within the ES will consider both designated and non-designated heritage assets. This includes locally listed buildings which fall under the non-designated category.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>Horse Pub will lose its serene outlook over the Binsted Rife valley as a result of the proposed scheme. These locally listed buildings, all non-designated heritage assets should be incorporated into HE's scope. Walberton parish has 39 listed buildings and Slindon has 62 listed, not 6 as shown in the report.</p>	
<p><b>West Sussex County Council</b></p>			
<p>Community Information (Archaeology) Action Plan</p>	<p>Tabulated response</p>	<p>Community Information (Archaeology) Action Plan. There is no provision in the Scoping Report for the dissemination of non-technical and intellectually accessible information about the programming and findings of intended archaeological surveys (for the purposes of site assessment and mitigation of impact) to stakeholders and the local community. Such dissemination should take the form of a Community Information (Archaeology) Action Plan (CIAAP), to be referred to in the PEIR/ES with a brief summary of the range of media to be used in order to provide that information, e.g., as part of a project e-newsletter or online blog. This information should be made available from the</p>	<p>A Community Information (Archaeology) Action Plan to disseminate information about ongoing archaeological surveys to the public and stakeholders is referred to in the PEI Report and will be included within the ES in line with the recommendations from WSCC.</p> <p>Information about ongoing archaeological activities will be disseminated regularly through online newsletters throughout the evaluation and later mitigation stages.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		start of on-site archaeological works, or as soon as practicable thereafter including the just-beginning archaeological monitoring of GI works, and later-this-year intended start of non-intrusive geophysical survey.	
Archaeological Mitigation Strategy	Tabulated response	The proposed Archaeological Mitigation Strategy should include details of the suggested CIAAP referred to above. See also below, 7.8.22.	A Community Information (Archaeology) Action Plan to disseminate information about ongoing archaeological surveys to the public and stakeholders is referred to in the PEI Report and will be included within the ES in line with the recommendations from WSCC.
Assessment	Tabulated response	WSCC is satisfied with the general approach to assessing population impacts and the proposed scoping out of the health impacts listed. Light pollution and odour should also be taken into consideration as health impacts especially during construction and air quality should be included as a key performance area given that 'The proposed scheme is identified as one of three schemes which aim to address congestion, delays to roads users, community separation, air pollution and the number of accidents along the existing A27'.	A qualitative lighting assessment will be included within the Landscape and Visual impact assessment reported within the Landscape and Visual chapter of the ES. There are no likely significant effects associated with odour associated with the Scheme, but the implications of air quality will be presented within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Ecological surveys.	Tabulated response	This table helpfully identifies the scope of additional ecological surveys. However, it is not clear what ecological surveys have already been conducted. It would have been helpful to present a summary of surveys already undertaken and their results.	A summary of surveys undertaken will be detailed within the ES.
Design, Mitigation & Enhancement Measures	Tabulated response	Design, Mitigation & Enhancement Measures: Regarding the potential measures outlined in bullet point 3, the design of the road crossing the Arun floodplain, including the River Arun itself, will also need to ensure that it does not create a barrier for wildlife movement. This will need to be supported by sufficient assessment in the ES.	A viaduct is proposed over the River Arun and River Arun floodplain, therefore, allowing for ensuring north south connectivity at this location.
West Sussex Joint Health and Wellbeing Strategy (2019-2024)	Tabulated response	WSCC expects to see reference to West Sussex Joint Health and Wellbeing Strategy (2019-2024). This document sets out the vision of the Health and Wellbeing Board, its goals and the ways in which it will work to improve the health and wellbeing for all residents in West Sussex.	Acknowledged, to be reported accordingly in the ES.
Baseline conditions	Tabulated response	WSCC planning applications should also be investigated to establish baseline conditions.	Acknowledged, to be reported accordingly in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Arundel library	Tabulated response	Libraries are key community facilities. WSCC suggests Arundel library could be included in this list.	Acknowledged, to be reported accordingly in the ES.
Equestrians	Tabulated response	Title refers to horse riding but no reference to equestrians in the paragraph. Due to the reasons set out in the WSCC response, equestrians need to be considered carefully. As for reference to impacts on journey length and severance these should be kept to an absolute minimum and all efforts should be made to reduce the negative impact on public path users where possible.	Acknowledged, to be reported accordingly in the ES.
Human health assessment	Tabulated response	Potential impacts upon human health determinants during operation should also cross reference to potential visual impacts to receptors, as well as potential changes in noise and air quality.	Acknowledged, to be reported accordingly in the ES.
The Institute of Public Rights of Way and Access Management	Tabulated response	Reference should be made to Environmental Impact Assessment: Appraising Access (The Institute of Public Rights of Way and Access Management, November 2020).	Acknowledged, to be reported accordingly in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Construction phase assessment	Tabulated response	In line with DMRB LA 11, the Scoping Report should outline how areas for construction phase assessment will be agreed with stakeholders. The approach suggested to consider consultation responses and discussions with stakeholders seems a little vague. It is suggested that this is considered by the relevant topic group and a specific question is included in statutory consultation survey to identify locations for assessment.	All stakeholder input received through the consultation process will be considered with regard to areas to be included in the construction phase assessment.
Assessment of landscape and visual effects	Tabulated response	In addition to the listed likely impacts from the construction phase, the following should also be considered likely, and relevant to the assessment of landscape and visual effects:- Loss of Ecosystems services, including severance of Green Infrastructure; and Severance of Public Rights of Way (and accordingly erosion of access/loss of public amenity). Some of the effects may be felt at some distance (particularly the visual effects, and that of the night sky), and as-such the description of “localised” effects is potentially misleading.	Any potential loss of biodiversity and severance to green infrastructure and PRow will be addressed in the ES and mitigated where possible and appropriate in the Landscape and Environment Masterplan. A study area for the LVIA has been established using professional judgement, including long-distance views one of which is a local astronomer hotspot within the SDNP.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
AQ receptors	Tabulated response	The approach to identifying specific receptors is accepted but as a list of receptors is not currently available, this should be agreed with the relevant stakeholders including WSCC prior to undertaking the assessment to reduce the risk of the assessment failing to meet the requirements of stakeholders.	As set out in DMRB LA105 guidance, receptors included within the air quality assessment will be selected based on their location being within 200m of the ARN identified through application of the DMRB traffic screening criteria for air quality. Those receptors which represent the worst case locations in an area will be included within the assessment. Where the risk of impacts being significant is identified, additional receptors in that area will be considered to ensure that the determination of overall significance is completed in line with DMRB guidance. The receptors that will be considered include residential locations, nursing homes, schools and healthcare facilities as appropriate. Receptor lists will be shared with relevant local authorities prior to the air quality modelling for the ES for comment.
Study area	Tabulated response	This does not appear to include all industrial/commercial uses in the study area, such as the two businesses on Arundel Road to the west of Fordingbridge plc that are vehicle repair and car body shop businesses.	Businesses have been identified in the area specified and are listed in the PEI Report Geology and Soils chapter (Table 9-3). These have been given a risk scoring (Table 9-6), and those with a higher risk scoring will be

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			assessed further and reported as part of the ES.
Climate assessment	Tabulated response	WSCC is satisfied with the general approach outlined in the climate assessment section. We would encourage that the landscape scale approach also applies to any carbon offsetting and sequestration measures.	Climate change specialists will liaise with the Landscape and Visual specialists on changes in potential carbon sinks.
Geoarchaeological monitoring	Tabulated response	The Impact Assessment should be informed by the findings of geoarchaeological monitoring of GI works and by geoarchaeological and palaeoenvironmental desk-based assessment (ref. Chapter 7, Cultural Heritage, 7.8.21). Geoarchaeological Desk-Based Assessment may indicate potential non-designated sites of geological interest.	Desk based assessments will be reviewed and considered as part of the ES.
Mitigation/Compensation	Tabulated response	The EIA should focus on mitigation and compensation to be provided, and this needs to both be clearly presented in the PEIR/ES and measurable, particularly if it is relied on for the purposes of presenting the residual impacts within the assessment.	Embedded mitigation measures are provided in the PEI Report. Following further design development and the results of the various technical assessments, the ES will provide further detail in terms of embedded mitigation and additional mitigation measures relied

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			upon when presenting the assessment of residual effects.
Arboriculture	Tabulated response	<p>All refer to BS5837:2012 – whilst this is the industry standard, there are limitations when applying a generic approach to calculating root protection areas (RPAs). Of necessity, there is no allowance for other important variables such as species, soil quality and depth and hydrology which have profound influence on RPAs. BS5837:2012 makes clear that RPAs are indicative of the ‘minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain a tree’s viability, and where the protection of roots and soil structure is treated as a priority.’</p> <p>The RPA is often seen as the maximum area with construction occurring at the RPA boundary or incursions made into the RPA. Category C trees should not be discounted automatically, ‘impaired condition’ may well provide diverse biodiversity benefits. Their collective value may be important.</p>	Existing vegetation retention will be sought where possible and appropriate. Further information will be provided in the Arboricultural Impact Assessment to be appended to the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Arboriculture	Tabulated response	The mitigation as described should be applied to hedgerows; restoration and rejuvenation of lower quality hedgerows is perfectly feasible and should be prioritised where connectivity is compromised.	Existing vegetation retention will be sought where possible and appropriate. Restoration of the hedgerow network within the Order Limits will be considered in the Landscape and Environment Masterplan.
Arboriculture	Tabulated response	Hedgerows receive scant mention within the Scoping Report. Those that are not 'important' under the Regulations should not be discounted. It may be possible to restore and improve these in terms of structure and species variety, contributing to enhanced landscape connectivity.	Existing vegetation retention will be sought where possible. A Landscape and Environment Masterplan and landscape and ecological management plan are being developed.
The Arun Valley floodplain	Tabulated response	The Arun Valley floodplain south of Arundel, including the grasslands and network of ditches, is possibly under-recorded and likely to require detailed ecological survey and assessment.	Following a gap analysis of existing data, surveys for macrophyte, macroinvertebrate, fish and River Habitat Surveys have been undertaken of ditches in the Arun floodplain where considered necessary.
Residents	Tabulated response	This section refers to 'residents' but should also include reference to future residents. Reference is made to the Avisford Grange development which is currently being built out to the east of Tye Lane. It is suggested that the reference is changed to 'residents of current and planned development'. We would suggest that the 'Visitors' receptor type	Future residents at Avisford Grange are noted in the Landscape and Visual PEI Report chapter and will be considered within the ES. The ES will make reference to elevated views from those on horseback. Educational facilities are included in the Landscape and

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>should also take into account additional ‘groups’ of visitors to Arundel generally, and to the WWT Arundel Wetland Centre. In addition, it should be noted that the group of ‘Users of PRow across the study area’ will also include people on horseback, whose additional height may have implications for experiencing visual effects associated with the proposed scheme. This additional height associated with Bridleway users should be taken into account in the visual assessment. Educational facilities are not covered by the categories currently listed but should be included as they are included in other topics such as air quality, noise and vibration.</p>	<p>Visual PEI Report chapter and will be considered within the ES.</p>
Harvest mouse	Tabulated response	<p>No additional surveys are proposed for harvest mouse. This species is often overlooked. Given the network of ditches, hedgerows and woodland edge habitats there could be suitable habitats within the Study Area which might warrant surveys. Any decisions not to survey a particular species, such as this, should be justified.</p>	<p>Harvest mouse is a priority species and is known to be present within the area and therefore will be considered in the ES. However, this species is not protected under the Habitats Directive or the Wildlife and Countryside act and therefore it is not necessary to carry out surveys. During construction, mitigation measures will be in place to avoid/reduce impacts on ecological features and the habitat creation proposed along the Scheme (such as grassland and</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			hedgerows) will provide habitat suitable to support harvest mouse.
Cumulative and in-combination effects	Tabulated response	Adur and Worthing a similar situation is apparent for New Monks Farm, where the allocation is included but the planning consent is not. The application for 249 dwellings at Withy Patch G&T site and the employment at Shoreham Airport, both served off the same roundabout access as New Monks were included.	Other developments that are determined to have potentially significant cumulative effects that have both an application and are allocated within local plans will be considered and information will be drawn from both the local plan and the planning consent to inform the assessment. Early indication shows that both proposed developments mentioned will be outside of the cumulative study area, this will be confirmed in the ES as the initial long-list presented in the PEI Report is developed
Traffic flows	Tabulated response	The proposed scheme is also expected to change traffic flows on parallel routes including parts of A29 and A259. These impacts at NSRs along these routes should also be taken into account.	In accordance with DMRB, the potential impacts at NSRs close to all routes expected to experience at least a 1 dB change in the opening year will be reported in the ES, even if these areas are outside the part of the study area for which detailed modelling is undertaken.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Biodiversity offsetting and enhancement	Tabulated response	Biodiversity offsetting and enhancement, e.g. new ponds, drainage, new tree planting, replacement habitat such as replacement badger setts, may involve ground excavations which may have an impact upon buried archaeological features and deposits, known or presently unknown. The ES should take account of these potential cross-cutting impacts within the relevant chapters.	Intrusive activities of all mitigation measures will be considered as potential impacts to the archaeological resource. The ES will take into account cross-cutting impacts within the relevant chapters.
Landscape study area	Tabulated response	It is noted and accepted that that para 8.3.1 states that the landscape study area should be “proportionate to the proposed scheme boundary, the wider landscape setting, potential visibility and the full extent of the setting of adjacent landscape receptors”. That ‘proportionate’ approach need not necessarily mean extending the area of search over a wide geographical area, as suggested in the bullet points at para 8.3.4. Whilst that wide geographical area may be appropriate for considering potential visual effects, it may be less appropriate in considering certain landscape elements and qualities which would have interactions with the proposed scheme at a more local scale. The need to carry out specific and more detailed surveys of landscape elements, qualities, functions and character at a local scale	Local landscape character areas and an LVIA study area have been presented as part of the Landscape and Visual PEI Report chapter, which will be further refined with consultation and field work. These local landscape character areas have been defined at a scale proportionate to consider the potential landscape impacts of the Scheme.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>(building-upon any information gained from published Landscape Character Assessments) is set-out at paragraphs 5.13 – 5.16 of GLVIA3, by the Landscape Institute and the IEMA. Nevertheless, the approach described at 8.3.6, allowing for refinement of the study area following discussions with the local planning authority and other stakeholders, is supported.</p>	
Landscape assessment	Tabulated response	<p>WSCC supports the proposal for the landscape assessment to include consideration of landscape (and townscape) character at a local level, “to provide an additional level of detail to the geographic areas identified by the published landscape character areas”.</p>	<p>Local landscape character areas have been presented as part of the Landscape and Visual PEI Report chapter, which will be further refined with consultation and field work before being presented in the ES.</p>
Construction information at PEI Report	Tabulated response	<p>WSCC expects to see at the PEIR stage a full presentation of the location, dimensions and nature of all temporary construction areas and haul roads, with a full justification for the sizes and locations needed. This must be fed into the topic assessments where required.</p>	<p>Locations of temporary construction compound areas and haul roads are shown on the Preliminary Landscape and Environment Masterplan (PLEM) presented in Figure 2.1 of the PEI Report. These are also described within The Scheme chapter of the PEI Report and will be reported in the ES.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Sharp Sand Resource Consultation Area	Tabulated response	The Scoping Boundary is also within the Sharp Sand Resource Consultation Area: <a href="https://www.westsussex.gov.uk/media/13437/mw_safeguarding_guidance.pdf">https://www.westsussex.gov.uk/media/13437/mw_safeguarding_guidance.pdf</a> This will require consultation with WSCC.	Minerals form part of the Material Assets and Waste chapter and is no longer considered in the Geology and Soils topic.
Minerals and waste	Tabulated response	WSCC suggest the following documents are included as there are references to minerals and waste and aspects covered in these documents in this section, as well as the subsequent sections: <ul style="list-style-type: none"> <li>• West Sussex Joint Minerals Local Plan 2018 (Ref 17);</li> <li>• West Sussex Waste Local Plan 2014 (Ref 16);</li> <li>• Review of the West Sussex Waste Local Plan 2014 (May 2019) (Ref 155);</li> <li>• West Sussex Waste Local Plan. Minerals and Waste Safeguarding Guidance (Ref 156).</li> </ul> The Soft Sand Review of the West Sussex Joint Minerals Local Plan has been completed and WSCC and SDNPA are programmed to Adopt the Soft Sand Review, as formal changes to the JMLP, with effect from 25th March 2021.	Minerals form part of the Material Assets and Waste chapter and is no longer considered in the Geology and Soils topic. Minerals and waste policy, including the adopted soft sand review, is addressed in the Material Assets and Waste chapter of the PEI Report and ES.
Mitigation measures	Tabulated response	Mitigation measures to be agreed with the relevant statutory bodies. It is not clear who the statutory bodies are for noise and what the	Mitigation measures will be discussed with Arun District Council throughout the process

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>process will be for agreeing mitigation measures. The statutory bodies will want to consider the evidence of impacts and formally respond during the consultation on options so cannot be expected to agree these measures in advance. It is suggested that the Applicant make efforts to agree these measures with statutory bodies, who should also be specifically identified.</p>	<p>and feedback from consultation will be considered.</p>
General	Tabulated response	<p>No reference to NMU's and whilst it says users and improving accessibility, WSCC would like to see particular reference due to the clear benefits of improving access and permeability for NMU's.</p>	<p>NMU routes have been considered in the design of the Scheme. NMU access will be improved where it is possible and feasible. Impacts on NMUs will be assessed in the Population and Human Health ES chapter.</p>
Cumulative and in-combination effects	Tabulated response	<p>WSCC refers the Applicant to the Planning Inspectorate website for other NSIPs. WSCC notes Rampion 2 Offshore Wind Farm is in the pre-application phase and has the potential to cross the proposed scheme in one of the cable route alignment options.</p>	<p>Noted, Rampion II NSIP will be considered for potential cumulative effects within the ES chapter.</p>
Cumulative and in-combination effects	Tabulated response	<p>The list of sites for the emerging Horsham Local Plan does not constitute the final preferred strategy of the District Council but their option list, so it will include some sites which will not be</p>	<p>Noted, schemes within Horsham's emerging local plan will be speculative until confirmed upon submission stage of the local plan to confirm the preferred strategy.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		allocated. These sites are best treated as speculative until Horsham’s Local Plan reaches submission stage.	
Construction vibration	Tabulated response	Unless there is commitment that significant sources of construction vibration have been designed out of the scheme, we would expect to see this included as a realistic worst case as part of the EIA and assessed as such.	Noted. A reasonable worst case assessment of construction vibration impacts will be undertaken as part of the EIA.
General	Tabulated response	The West Sussex Plan is a non-statutory plan and does not form part of the statutory development plan for the area so should be removed from this list.	Noted.
COVID 19	Tabulated response	WSCC understands that measures required in response to COVID-19 have consequences for an Applicant’s proposed approach and ability to obtain relevant environmental information, including consultation feedback for the purposes of their assessment. As per PINS Advice Note Seven (Version 7, June 2020), WSCC will look to the Applicant to provide suitably flexible approaches, in keeping with government COVID-19 guidelines, to aid the robust collation of	Noted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		information for the purposes of PEIR and ES production.	
General	Tabulated response	WSCC should be listed as a relevant planning authority in addition to Arun DC and SDNPA.	Noted.
Assessment of landscape and visual effects	Tabulated response	Subject to addition of a year 1 summer and year 15 winter assessment, the LVIA approach set-out appears to be relatively standard, and is broadly acceptable, particularly taking into account the proposed collaborative approach which would ensure further engagement of local planning authorities and stakeholders in 'Focus Groups'. This should allow the scope to be appropriately refined in a way that responds to new evidence as it becomes available.	Noted.
Desk study	Tabulated response	The proposal to conduct an updated desk study, to include data from The Sussex Biodiversity Record Centre, MAVES and other sources, and in particular to map the records is welcomed.	Noted.
General	Tabulated response	The Scope of Additional Ecological Surveys are presented in Table 22 (not Table 17, as mentioned).	Noted.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Stockpiling	Tabulated response	Material recovered but simply left to long term stockpiling should not contribute to the overall assessment of significance. Only materials that are recovered and reused within the construction window of the project should be material.	Noted.
General	Tabulated response	Typo should refer to A284.	Noted.
SDNPA	Tabulated response	The process for agreeing locations for noise assessment needs to be consistent with paragraph 12.3.6. SDNPA should be listed as a relevant stakeholder.	Noted.
Baseline heritage asset setting assessment	Tabulated response	The baseline heritage asset setting assessment should include relevant photomontages, with special reference to, but not necessarily solely comprising identified designated heritage assets within the visual envelope of the scheme, e.g., Scheduled Monuments, Listed Buildings, Registered Parks and Gardens, Conservation Areas.	Relevant visualisations will be prepared to aid the assessment of effects to the setting of heritage assets. The location and type of visualisation will be agreed with consultees as part of the consultation process. These will be prepared in tandem with the Landscape and Visual impact assessment.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
PM2.5	Tabulated response	<p>Although the baseline data suggests that concentrations of PM2.5 are within the relevant air quality objective, this does not justify excluding PM2.5 from the assessment. As emissions of NOx and PM10 are expected to reduce as the vehicle fleet transitions to electric propulsion, in the future PM2.5 are expected to make up a higher proportion of vehicle emissions and should therefore be assessed. (Fine Particulate Matter in the United Kingdom, Air Quality Expert Group 2012) <a href="https://uk-air.defra.gov.uk">https://uk-air.defra.gov.uk</a></p> <p>WSCC is not satisfied with the approach to assessing air quality impacts and requests that an assessment of PM2.5 is scoped in and the Applicant should commit to agreeing specific receptors prior to undertaking the assessment.</p>	<p>As set out in the EIA Scoping Report within paragraph 6.8.4. .."<i>PM<sub>2.5</sub> will not be assessed with air quality modelling as it is not a requirement of DMRB LA 105. The UK currently meets its legal requirements for the achievement of the PM<sub>2.5</sub> air quality thresholds and the modelling of PM<sub>10</sub> can be used to demonstrate that the Scheme does not impact on the PM<sub>2.5</sub> air quality threshold. Baseline data in the approximate area of the previous TRA also indicates PM<sub>2.5</sub> concentrations are well within the relevant air quality objective.</i>" To provide further detail, the monitoring referred to in paragraph 6.8.4 is the PM<sub>2.5</sub> concentration monitored at Worthing Grove Lodge/Lyons Farm AQMA, which in 2018 was 10µg/m<sup>3</sup> compared to an objective of 25 µg/m<sup>3</sup> (See paragraph 6.4.8. of the EIA Scoping report). This is 60% lower than the air quality objective for PM<sub>2.5</sub> of 25 µg/m<sup>3</sup>, before any further improvements in air quality occur in the future due to anticipated improvements in vehicle emissions and background sources of pollution. As the air quality assessment within the ES will focus on the significance of pollutant concentrations</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			<p>that are in excess of objective values this monitoring shows that PM<sub>2.5</sub> quantitative assessment is not required, as PM<sub>2.5</sub> concentrations are so low in the anticipated study area, even within poorer locations of air quality, such as an AQMA. However, as also set out in EIA Scoping Report paragraph 6.8.4 PM<sub>10</sub> concentrations will be presented in the ES to re-confirm that this position is correct for PM<sub>2.5</sub>. This approach can be adopted as PM<sub>2.5</sub> (particulates with a diameter of 2.5µm or less) is contained within the larger PM<sub>10</sub> (particulates with a diameter of 10µm or less) size fraction. This approach is in line with the policy test within the National Networks National Policy Statement (NNNPS) for air quality which focuses on the significance of effects for concentrations of pollutants above air quality thresholds.</p>
Arboriculture	Tabulated response	Subject to the addition of the agreed assessment tool, the general approach to assessing the arboricultural resource is satisfactory. The potential for tree, woodland and hedgerow loss is significant, so a stand-alone arboriculture chapter would provide clarity instead of this being a	Since there is no recognised arboricultural methodology for EIA an Arboricultural Impact Assessment to the BS5837:2012 methodology will be included in the appendices at ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		subordinate part of the landscape and visual chapter. Detailed assessment of this substantial resource is required to assess the impact of the proposed scheme.	
Arboriculture	Tabulated response	Whilst arboriculture is intrinsic to landscape and biodiversity as well as other topics like cultural heritage, it should have a stand-alone chapter. This would acknowledge the importance of the discipline and present arboricultural considerations and issues clearly in one place. It is proposed to have the AIA and AMS as appendices to the ES, so it makes sense to have a separate arboricultural chapter.	Since there is no recognised arboricultural methodology for EIA an Arboricultural Impact Assessment, undertaken in accordance with the BS5837:2012 methodology will be included in the appendices of the ES.
Consultation	Tabulated response	WSCC wishes to reiterate the importance of the design process and how the involvement of WSCC and other stakeholders in providing local knowledge, feedback on design development and input to potential opportunities is critical. As well as regular involvement in the Focus Group meetings, WSCC wishes to see a clear presentation of how the Applicant has reached a chosen design to take forward to EIA and DCO application, and how stakeholder feedback and environmental constraints and opportunities have	Stakeholder consultation is considered throughout the DCO process, including input into the selection of viewpoint and photomontage locations. As described in the PEI Report these are being agreed with relevant stakeholders following field work. The PEI Report chapter includes a table which shows the proposed locations of these viewpoints within Appendix 7-1. The footprint of the Scheme will be minimised and has been discussed through several order limits

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>fed into this process. WSCC wish to see the footprint of the project minimised as much as possible to avoid environmental impacts to sensitive receptors. Due to the scale of highway improvements, WSCC wish to see the highest standard of design and package of detailed environmental mitigation. This would include extensive landscaping/screening; translocation of soils from Ancient Woodland to create new compensatory habitats; creation of 'green bridges' to maintain connectivity between habitats; extensive noise mitigation; and new facilities for NMUs to integrate the scheme into the wider network of NMU facilities.</p>	<p>meetings between disciplines to ensure it is acceptable for all essential mitigation. Environmental mitigation is being implemented where it is possible and appropriate, including green bridges.</p>
<p>Construction information</p>	<p>Tabulated response</p>	<p>WSCC would like to understand further the likely construction durations for each element of the proposed scheme. Any assessment must consider reasonable contingency to ensure the assessment of potential impacts is robust (Rochdale Envelope).</p>	<p>Start and finish dates for the construction programme are provided in the PEI Report. Further detail on the main phases of the construction programme will be provided in the ES. The comment regarding the Rochdale Envelope and ensuring there is reasonable contingency in the assessments is noted.</p>
<p>Assessment timescales</p>	<p>Tabulated response</p>	<p>Please specify that the weekend assessment includes all day Sundays as they are not currently mentioned in the time of day categories.</p>	<p>Sundays are included under weekends in Table 37. This was an error in the previous</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			table as the line had been cropped by the table formatting.
Arboriculture	Tabulated response	The arboricultural study area is stated (currently) to be within 100m of the proposed scheme. Given that in favourable conditions, roots can extend well beyond any calculated RPA, consider enlarging the study area, particularly if the road alignment changes. It is unclear whether the study area includes the likely land take/construction corridor of the proposed scheme or is it 100m in addition to it. The Scoping Report should clarify this point.	The approach is intended to ensure that any tree with the potential to be impacted is considered. This will be less than 100m in some areas but could be more than 100m in other areas. The study area for the final Scheme design will be presented in the Arboricultural Impact Assessment to be appended to the ES.
Walkers, cyclists and horse-riders	Tabulated response	Walkers, cyclists and horse-riders are also road users so could be impacted by potential disruption to public highways in addition to Public Rights of Way.	The consideration of impacts on walkers, cyclists and horse-riders in respect of both impacts on PRowS and other facilities will be considered including in respect of severance from disruption to public highways.
General	Tabulated response	The proposed scheme does not include a junction at Ford Road. The decision on whether to include this is expected at PCF stage 3, so the Scoping Report does not currently consider the potential worst case impacts of the proposed scheme. The proposed scheme and associated red line	As part of the continuing dialogue with stakeholders regarding the Scheme proposals, it has been suggested that a junction at Ford Road should be included as part of the Scheme. This possibility is currently the subject of ongoing options

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		boundary should include a junction at Ford Road to ensure that the worst case has been considered.	appraisal. However, initial findings suggest that its inclusion as part of the Scheme is not justified. Should that options appraisal conclude that a junction at Ford Road is required as part of the Scheme, a further targeted consultation will be undertaken on that proposed inclusion. Detail on the options appraisal undertaken and its conclusions will be presented in the ES.
Historic Environment Record (HER)	Tabulated response	Historic Environment Record (HER) – there is no provision in the Scoping Report for the feeding of information arising from the archaeological assessments and surveys into WSCC’s HER database. It will be essential to keep this new information flowing into the HER in a non-technical and accessible format, providing GIS shapefiles, so that the HER can be kept up-to-date to inform the next stages of assessment and the Archaeological Evaluation and Mitigation Strategies (7.6.1, 7.8.22). These two Strategies, and the Written Schemes of Investigation arising from them, should make clear how assessment and survey information will be presented accessibly and non-technically, and with readily usable IT, for inclusion in the HER.	The dissemination of archaeological information to the HER will be set out in the relevant Written Scheme of Investigation (WSI) for the various archaeological surveys. These WSIs will be agreed in consultation with WSCC and an appropriate method of data transfer will be implemented.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Mitigation	Tabulated response	WSCC notes that the need for likely areas of land required for mitigation has not been identified yet. Has the Applicant identified a large enough Scoping Area to allow for these areas to be included?	The draft Order Limits will be presented within the PEI Report and will present a worst case scenario. The Order Limits will be updated for inclusion in the ES. Any additional areas identified within the PEI Report and ES will be assessed and the results presented to inform the DCO application.
Likely significant effects	Tabulated response	In the description of likely significant effects, an additional paragraph is needed (7.7.6) to address mitigation of historic landscape severance impacts; (a) the severance of Binsted as a historical settlement into three parts, isolating its most ancient and historically important building, St Mary's church, from its historical context, the village which it served; and (b) severance by the road crossing of the community's view along the Binsted Rife valley, a proximate and very visible feature of the village's historical landscape in all periods.	The effect of the Scheme on the historic settlement of Binsted, including the contribution made by its surrounding landscape, will be fully considered within the assessment. These impacts are also being considered in the ongoing detailed design for the Scheme and will be minimised as much as possible. The Cultural Heritage specialists will work closely with the Landscape and Visual specialists in the consideration of effects.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Renewable materials	Tabulated response	The second bullet includes the wording “maximising the use of renewable materials”. A material can be renewable, but still not necessarily being renewed in a sustainable manner, with negative wider environmental or societal impacts. This needs to be considered, and wider sourcing policies considered and applied when selecting materials. The wording also includes: “design for materials optimisation”. This principle should be extended to the whole life cost of the materials selected, reflecting maintenance requirements, and carbon impacts.	The EIA will consider environmental impacts and the significance of environmental effects for all environmental aspects where relevant. The Material Assets and Waste aspect ES chapter will assess the impacts and effects on materials and waste management.
Waste Impacts	Tabulated response	The approach to waste appears to be considered in isolation of the other impacts of the proposed scheme. Materials should be selected that reflect all aspects of the project’s impacts, not solely waste reduction.	The EIA will consider environmental impacts and the significance of environmental effects for all environmental aspects where relevant. The Material Assets and Waste aspect ES chapter will assess the impacts and effects on materials and waste management.
General	Tabulated response	As per 2.2.3, the proposed scheme key features should specifically identify connections for NMUs into the wider network of facilities; for example, a new facility between Crossbush and the A284 Lyminster Bypass / FP2205 that will be needed to ensure the scheme connects into the wider	The emerging proposals will explore opportunities to provide enhanced NMU access across the existing A27. This will be clearly described in the Scheme description within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		network and provides facilities for NMUs. There is reference to de-trunking the existing A27 but no mention of interventions to make this de-trunked road easier to cross for NMU's. The proposed scheme description should be amended to include these facilities.	
SDNP	Tabulated response	Given the development is largely outside SDNP, paragraph 1.154 of NNNPS is particularly relevant to this scheme and should be specifically referenced as it is a key aspect of the policy context for assessing landscape and visual impacts.	The NNNPS will be referenced and fully addressed in the ES.
Visual assessment	Tabulated response	Although it is understandable that the visual assessment “will not consider views from parts of recreational routes that may be closed during the construction phase or re-routed in the operational phase”, it will nevertheless be important to take into account the baseline scenic value of a landscape, broadly considering all views that contribute to the overall baseline situation and consider if the proposed scheme may cause changes to those scenic qualities. As set-out in GLVIA3 at para. 5.28, landscape value may take into account scenic value, which is “the term used	The ES will consider the baseline scenic value of the landscape through the assessment of effects on landscape character.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		to describe landscape that appeal primarily to the senses (primarily but not wholly the visual senses)", alongside judgements regarding sense of place within the landscape, and it's aesthetic and perceptual qualities.	
Statement of competence	Tabulated response	WSCC acknowledges and agrees that assessments of the criteria of likely environmental effects are made on the basis of professional judgment. WSCC welcomes, pursuant to Regulation 14 (4) of the 2017 Environmental Impact Assessment (EIA) Regulations, the resultant ES being prepared by competent experts. WSCC expects to see that the PEIR/ES provides a Statement of Competence to this effect.	The ES will include a Statement of Competence.
Ancient woodland	Tabulated response	All areas of ancient woodland, regardless of whether they lie within designated sites, will require detailed ecological assessment.	The ES will include an assessment of ancient woodlands in relation to construction and operational impacts.
Assessment of landscape and visual effects	Tabulated response	The description of the likely significant effects should remove the word 'local', since the reach of the potential effects cannot be fully appreciated prior to assessment work being undertaken.	The ES will include an assessment of landscape and visual impacts across the study area.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
AQ guidance	Tabulated response	Reference should be made to 'Breathing Better a partnership approach to improving air quality in West Sussex' (May 2018). WSCC and all West Sussex District and Borough Councils are committed to ensuring that the County is a healthy place to live.	The ES will include consideration of the 'Breathing Better a partnership approach to improving air quality in West Sussex' document.
Design, Mitigation & Enhancement Measures	Tabulated response	Design, Mitigation & Enhancement Measures: Little has been said about Post-construction Ecological Monitoring and Long-term Habitat Management. Both of these are key to the success of any package of mitigation, compensation and enhancement measures. Section 9.8.6 makes some reference to monitoring to inform future management. To increase confidence in the success of the mitigation, compensation and enhancement measures, WSCC would expect the Applicant to make a commitment, such as: A post-construction monitoring programme would be carried out during the first five years after construction (the initial maintenance period) to assess establishment of the ecological mitigation measures, help inform future management and, if necessary, allow for the implementation of remedial measures. Furthermore, the ES should	The ES will outline any post construction management and monitoring strategies that are considered necessary. The ES will also include the methods for securing these strategies.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		include a Habitat Management Plan/Ecology Aftercare Plan.	
West Sussex Transport Plan	Tabulated response	The planning context set-out has omitted to refer to the West Sussex Transport Plan 2011-2026, which does have some relevance to landscape matters. The document (along with its associated Strategic Environmental Assessment) sets out WSCC strategic objectives to protect and enhance heritage and landscape character, as well as indirectly-related objectives such as enhancements to the cycle and pedestrian network. This should form part of the baseline context for considering the potential landscape and visual effects of the proposed scheme.	The ES will refer to the West Sussex Transport Plan 2011-2026.
Assessment of landscape and visual effects	Tabulated response	Some of the potential impacts associated with the construction phase would also apply to the operational phase, such as changes to surface landform, loss of vegetation, severance of the Green Infrastructure network, loss of Ecosystems	The ES will report on the full assessment of the construction and operational impacts of the Scheme.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>services and severance of the PRow network. As well as the noted likely impact on Arundel's townscape character, including tranquillity, a further potential likely impact on the landscape character of the rural environment around Arundel should also be assessed.</p>	<p>This will include specific consideration of the potential impacts on the landscape character of the rural environment around Arundel.</p>
<p>The landscape and environment led approach</p>	<p>Tabulated response</p>	<p>The landscape and environment led approach with landscape, biodiversity, hydrology &amp; cultural heritage considered together in an integrated Environmental Masterplan is welcomed by WSCC. Habitat severance, with impacts on a range of species including bats, hazel dormice and water voles, is of major concern. Thus, the landscape scale approach to designing this road is also welcomed. Given the potential for significant adverse impacts on ecology, the proposed scheme will require a comprehensive package of mitigation, compensation &amp; enhancement measures. These will need to be detailed in the ES, as will commitment to delivering a Habitat Management Plan to ensure appropriate long-term management of habitats, green bridges and other features created. As the proposed scheme includes de-trunking of the</p>	<p>The ES will set out how the Scheme has incorporated design measures to avoid and minimise impacts on ecological features where possible and will outline any additional mitigation and compensation measures to be adopted.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>existing A27, opportunities to enhance north-south habitat connectivity across this section should be explored. This might, for example, involve creating wildlife corridors to assist the movement of bats, hazel dormice and other species between Binsted Wood and Rewell Wood. Without such measures the proposed scheme would make Binsted Wood very isolated from the surrounding landscape. The ES should demonstrate that all opportunities have been taken to provide ecological enhancement. It is recommended that a full Biodiversity Net Gain (BNG) Assessment is undertaken as proposed in The Environmental Assessment Report, Appendix 8-25 (Highways England, 2019).</p>	
Archaeological Evaluation Strategy	Tabulated response	<p>The proposed Archaeological Evaluation Strategy should include reference to the CIAAP, with a brief outline of the range of media to be used in disseminating to stakeholders and the local community the programming and findings of archaeological assessments, surveys and findings.</p>	<p>The evaluation strategy in the PEI Report and ES will reference the CIAAP.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Baseline heritage asset setting assessment	Tabulated response	The baseline heritage asset setting assessment should also take account of tranquillity, using the tranquillity considerations referred to in Chapter 8 (Landscape and Visual), 8.4.30 and 8.4.31, as a guide.	The heritage assessment will consider the contribution ambience makes to the understanding of the significance of the assets, in accordance with current guidance prepared by Historic England.
General	Tabulated response	Due to the sensitivity of the local environment, delivering major highway improvements in this area will require the highest standard of design, including environmental mitigation. Therefore, through scheme development and a thorough and robust EIA process, WSCC expects to see a detailed and high quality design and package of mitigation measures presented to reduce the impacts on the environment and affected communities. WSCC will expect consultation on the evidence of socioeconomic benefits through the development of the proposed scheme.	The impact on the local environment will be assessed as part of the ES, with particular attention paid to local sensitivities including the South Downs National Park to the north. Mitigation measures will be implemented where appropriate to reduce impacts on the environment and affected communities. WSCC will be consulted as part of the Population and Human Health assessment.
Importance to different habitats	Tabulated response	The criteria for ascribing the level of importance to different habitats is unclear. Table 20 has a heading 'Ancient woodland, veteran trees & Habitats of Principal Importance (Referred to as Presumably Priority in Section 9.4.7). As Habitats of Principal Importance (or Priority Habitats) as listed under Section 41 of The NERC Act (2006),	The importance assigned to ecological features will be in accordance with the guidance outlined in Table 3.9 of DMRB LA 108 (revision 1) and justification for the value assigned will be provided within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>it is of concern that some are ascribed only Local Importance in Table 20 and without any justification. E.g., Deciduous woodland and wet woodland are both Habitats of Principal Importance yet ascribed Local Importance if not within a Local Wildlife Site (LWS). Traditional orchard is ascribed County Importance in Table 20 yet are Habitats of Principal Importance. Hedgerows are ascribed County Importance (when meeting LWS criteria), otherwise only Local Importance. Some of these hedgerows may be of at least County importance, and potentially even greater when one considers their importance in terms of habitat connectivity within the landscape (as bat and dormouse corridors). The Environmental Assessment Report (Highways England, 2019) considered all hedgerows to be of County importance (as a Habitat of Principal Importance). Table 20 affords only Local Importance to ponds, yet nationally, like hedgerows, they are a Habitat of Principal Importance.</p>	

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Other Notable Mammals	Tabulated response	Other Notable Mammals: Harvest mouse: The Study Area is ascribed Local importance for harvest mouse. The basis for this is not clear. This species is often under-recorded and given the network of ditches, hedgerows and woodland edge habitats there could be potential for a population of County importance.	The importance assigned to ecological features will be in accordance with the guidance outlined in Table 3.9 of DMRB LA 108 (revision 1) and justification for the value assigned will be provided within the ES.
The accounts of baseline conditions	Tabulated response	The accounts of baseline conditions e.g., 'Landforms and Hydrology' are all reasonably factual (at a high level). However, it is not clear what relevance they have to the purpose of a Scoping Report, unless they are intended to show how the study area has been informed. If that is the case, this has not been stated.	The landscape baseline, including reference to topography and hydrology, will be included as an Appendix to the Landscape and Visual PEI Report Chapter to provide information on the existing landscape baseline. This will be used to inform the design process and assessment of potential effects against the baseline situation.
Cumulative and in-combination effects	Tabulated response	This long list will need regular updating as work on the EIA progresses, including all planned development including the new school referenced in policy INF SP2 of the Arun Local Plan and the Arun District Council Secondary School Site Selection Study. If not already, it is suggested that Permitted Development is included once 'Prior Notification' is received. The list does not include WSCC Waste Local Plan site allocations	The long list of developments will be updated as the ES chapter progresses and will consider applications, allocations from local plans and waste allocations.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		and application/approvals for minerals, waste and WSCC developments.	
Cumulative and in-combination effects	Tabulated response	The list of sites in Appendix C does not include an up to date list of planning consents in Chichester District. In some cases, Local Plan allocations (west of Chichester, Tangmere, Shopwhyke) are included but the associated applications/consents at these sites are not separately listed. This could lead to them being omitted from core scenario forecasting, as allocation sites where an application is not imminent or current or consented are included in the “reasonably foreseeable” category for uncertainty analysis rather than “more than likely” for applications or “near certain” for consents.	The long list of developments will be updated to include all applications and allocations that meet the PINS guidance criteria and that fall within the cumulative study areas. This will be presented within the ES.
Photomontages	Tabulated response	The production of photomontages in accordance with the Landscape Institute’s Technical Note 06/19: Visualisation of Development Proposals, 2019 is supported. However, this particular Technical Note should be read alongside others, namely:- Visualisation of development – glossary (7/19) Camera auto-settings (8/19) Earth curvature (9/19)	The LVIA will be undertaken with reference to best practice, including technical guidance notes published by the Landscape Institute. Photomontage locations will be discussed and agreed with reference to the Cultural Heritage ES chapter.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>Other LI Technical Information notes, and Technical Guidance may be relevant to considering the potential landscape and visual effects of the proposed scheme, namely:  Residential Visual Amenity Assessment (2/19)  Landscape Character Reading List (5/15)  Landscape Character Assessment (8/15)  Ecosystem Services (2/16)  Tranquillity (1/17)  Digital realities (10/19)</p> <p>In agreeing locations for photomontages for the purposes of LVIA, the proposed integrated approach to environmental mitigation should take full account of photomontages which may be desirable or essential for the purposes of baseline heritage asset setting assessment (7.8.12 above), though in some cases not essential for LVIA. In those circumstances photomontages necessary for heritage asset setting assessment should not be deleted because of their lesser value for LVIA.</p>	
Scope of the visual assessment	Tabulated response	Although some suggestion of viewpoint locations is often made in Scoping Reports, we acknowledge and accept 8.9.3 and 8.9.4 stating that the Scoping Report is a “high level review”,	The LVIA will take sequential views into account as well as more specific views, as defined in GLVIA 3. The visual assessment will also include residential receptors as a

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>and that “a more detailed desk-based study will be undertaken along with detailed fieldwork during the winter”, following which “the proposed study area and landscape and visual receptors will be presented to the local planning authority and other stakeholders to seek agreement on the scope of the assessment”.</p> <p>In refining the scope of the visual assessment, sequential visual experiences should be taken into account where required, rather than just assessing a view from a single viewpoint, i.e., a receptor may be moving through the landscape on a footpath, lane, railway etc., and it is more appropriate to group the visual effects they would experience rather than assessing them individually as if the receptor were stationary. In recognition of the proposed route’s proximity to dwellings, and in accordance with normal LVIA practice, the visual assessment should also consider the potential effects on private views from dwellings. Should potentially significant effects be identified, it may then be considered appropriate to undertake a separate Residential Visual Amenity Assessment, considering the Landscape Institute’s Technical Guidance Note 2/19.</p>	<p>receptor group and a Residential Visual Amenity Assessment will be undertaken if deemed appropriate.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Landfill capacity	Tabulated response	In terms of inert landfill capacity, reference is made to the 295,000 tonnes that is recorded in the Waste Data Interrogator. However, this is not an accurate reflection of the ‘capacity’ for inert disposal to land. There is a list of further ‘recovery’ projects in the WSCC Annual Monitoring Reports where inert material would/could go.	The Material Assets and Waste chapter of the ES will be prepared in line with DMRB LA 110 guidance. This includes the assessment of impacts and the significance of effects on landfill capacity. The assessment will also consider the management routes for the forecast waste arisings including the reuse, recycling and recovery of construction and demolition wastes.
Material sourcing	Tabulated response	The first bullet point includes the wording “securing and using materials that already exist on site or can be sourced from other projects”. Opportunities should be explored to source materials from projects within the local area (within the county ideally), rather than from national projects to reduce the impact of transportation to site.	The Material Assets and Waste chapter of the ES will consider the cut and fill balance and use of reused/ recycled / secondary materials within the assessment, in line with the DMRB LA 110 guidance.
Waste generated	Tabulated response	The table lists the types of materials that may arise from the construction. Consideration should be given whether this needs to be further broken down and assigning whole value/potential of the waste generated.	The Material Assets and Waste chapter of the ES will include information on the types and quantities of material use and waste arising that are expected from construction of the Scheme and an assessment of effects and significance.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Baseline	Tabulated response	There is a metal recycling site c1km to the west of the proposed scheme that appears to be missing. WSCC are happy to provide further details of the minerals and waste sites in the area through the development of the baseline.	The Material Assets and Waste chapter of the ES will review the locations of waste management infrastructure and any associated Waste Infrastructure Consultation Areas against the confirmed Order Limits for the Scheme and assess the significance of effects.
Safeguarded areas for sharp sand and gravel	Tabulated response	It is noted and reflected in the Scoping Report that some of the route falls within the safeguarded areas for sharp sand and gravel. Therefore, consideration of the potential sterilisation of the resource is needed. The EIA needs to consider the sterilisation of mineral resources not just safeguarded sites, which the Scoping Report seems to focus on more than the whole resource. There is only a passing reference in 11.6.2 as to the use of materials that already exist on site and Table 35 refers to likely sterilisation of material, but states that further assessment is required. Table 36 recognises that this could be a large effect but appears to be only related to a safeguarded mineral site rather than the mineral resource. The Scoping Report mentions the safeguarding guidance, Policy M9 of the JMLP and the sharp sand and gravel MSA. However, it	The Material Assets and Waste ES chapter will assess the impacts and effects of the Scheme on mineral safeguarding sites and resources. Consultation with West Sussex County Council and South Downs National Park Authority will be included.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		<p>does not mention or consider what the JMLP seeks when assessing potential mineral sterilisation. The Scoping Report states that the Applicant will consider whether minerals will be sterilised but does not expand to the fact that sterilisation can be avoided by prior extraction. Prior extraction is a consideration and it is suggested that this is included in the EIA work as it progresses.</p>	
Minerals and Waste Plans	Tabulated response	<p>WSCC support the recognition of Minerals and Waste Plans, and relevant safeguards through those plans, that will require consideration going forward. Further work is recognised and that would need to be addressed as work is progressed. It is recognised in the Scoping Report that potential mineral sterilisation could be a large effect moving forward. As set out above, further work should be done to consider the guidance and that sterilisation of mineral resources can be avoided by prior extraction.</p>	<p>The Material Assets and Waste aspect ES chapter will assess the impacts and effects of the Scheme on mineral safeguarding sites and resources. Consultation with West Sussex County Council and South Downs National Park Authority will be included.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Arboriculture	Tabulated response	<p>As with ancient woodland, no amount of replacement planting can compensate for the loss of veteran/ancient trees, which are habitats themselves, sometimes hosts to unique assemblages of organisms. It is imperative that any tree/hedgerow removal is minimised and justified. As detailed design progresses, unavoidable losses will become evident but within this document there are several references to avoiding losses and mitigation being ‘wherever practicable’ and ‘wherever possible.’</p> <p>Calculating arboricultural value should be undertaken using an agreed assessment tool such as CAVAT or i-Tree.</p>	<p>The methodology for calculation of arboricultural value will be agreed in advance of the production of the Arboricultural Impact Assessment and ES.</p>
Landscape value	Tabulated response	<p>The criteria for determining landscape value should consider more than those suggested, which are based on various designated statuses of landscapes. Determining landscape value should also take into account value which can be attributed to individual elements, features and aesthetic or perceptual dimensions, in accordance with GLVIA3 para. 5.20.</p>	<p>The methodology for the ES is informed by standards in DMRB LA 107 and guidance within GLVIA 3.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Landscape susceptibility	Tabulated response	<p>The criteria for determining landscape susceptibility (N.B. para 8.8.9 of the Scoping Report erroneously refers to ‘visual susceptibility’) should consider more than those suggested, which only refers to a landscape’s ability “to accommodate change” (i.e., considering the landscape in its own-right). Determining landscape susceptibility should also consider the extent to which a proposed development may or may not compromise the ability for planning policy and strategies to be met. This best practice methodology follows GLVIA3, para. 5.40 which sets out that judgements on a landscape receptor’s susceptibility to change should consider whether a landscape receptor could potentially accommodate the proposed development “without undue consequences for... the achievement of landscape planning policies and strategies”.</p>	<p>The methodology for the ES is informed by standards in DMRB LA 107 and guidance within GLVIA 3.</p>
Assessment of landscape and visual effects	Tabulated response	<p>Table 13 sets out criteria for ascribing ‘beneficial’ impacts as well as ‘adverse’ impacts, whereas Table 17, the equivalent criteria for ascribing magnitudes of visual effect, does not differentiate between ‘beneficial’ and ‘adverse’. Furthermore, Table 18 (Landscape and Visual significance of</p>	<p>The methodology for the ES is informed by standards in DMRB LA 107 and guidance within GLVIA 3. Beneficial effects of the Scheme will be addressed within the assessments, where relevant.</p>

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		effects matrix) does not differentiate between 'beneficial' and 'adverse'. The proposed scheme may have some beneficial visual effects, for instance, the de-trunking of the existing A27 and a significant reduction in traffic. The study should also consider these possible positive changes (with respect to both landscape and visual effects), in order to present a balanced assessment.	
Assessment of landscape and visual effects	Tabulated response	It is assumed that the criteria described would be applicable to considering the magnitude of effect, alongside that set-out within Tables 13 and 17. Whilst this is acceptable in principle, the methodology is not explained.	The methodology for the ES is informed by standards in DMRB LA 107 and guidance within GLVIA 3. The methodology will be explained in full within the ES.
Receptors outside of the SDNP	Tabulated response	It is not accepted that receptors outside of the SDNP should be 'scoped out' of the assessment of night-time visual effects. Although these receptor locations are outside of the designated 'Dark Sky' landscape, night-time effects nevertheless still have the potential to be significant and adverse, and accordingly should be given proper consideration in the LVIA.	The night-time assessment will not be limited to the SDNP. However, this is an important part due to the international dark skies designation for the SDNP.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Neighbourhood plans	Tabulated response	Please specify which neighbourhood plans are considered to be relevant. This should include Walberton Neighbourhood Plan, along with the Arundel Neighbourhood Plan, as it has a more up-to-date document which was 'Made' January 2020. Ford Neighbourhood Plan was also 'Made' January 2019 and Walberton Neighbourhood Plan passed Examination March 2021. It should also be noted they are part of the Development Plan for the area so specific policies may need to be referenced in various sections of the EIA, for consideration as work progresses.	The relevant neighbourhood plans will be ascertained and reported accordingly in the ES based on the Study Area determined.
Carbon budget	Tabulated response	Table 58 needs updating to include the sixth carbon budget. The supporting text in para 15.8.8 will also need amending.	The sixth carbon budget had not been adopted when the EIA Scoping Report was produced. The ES will reflect the latest information on carbon budgets.
SSSI and a Local Nature Reserve (LNR).	Tabulated response	Fairmile Bottom is both an SSSI and a Local Nature Reserve (LNR). Thus, there is one LNR within 2km of the proposed scheme.	The status of Fairmile Bottom as a SSSI and LNR will be detailed within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Baseline heritage asset setting assessment	Tabulated response	It may be appropriate in some cases for photomontages prepared for LVIA purposes to be shared for heritage asset setting assessment purposes; but in preparing the ES, care should be taken to identify key photomontages necessary only for heritage asset setting assessment, which should be included in Chapter 7 (Cultural Heritage).	The visualisations prepared for the Landscape and Visual impact assessment will be cross-referenced within the heritage assessment as appropriate. Additional, heritage visualisations will also be prepared. The exact location of these is to be agreed in advance with the consultees.
PROW impacted	Tabulated response	There is reference to a study into the levels of use of the PROW impacted. This will not necessarily be a fair reflection on desirability as use may currently be negatively impacted by the severance caused by the existing A27 alignment and the lack of safe crossing points.	The WCHAR Assessment Report will consider opportunities for improving use of PROWs/routes, with these being incorporated in the design of the Scheme where feasible and desirable.
General	Tabulated response	With regards the ES structure, will the Applicant be including a chapter on consultation, with an appended Consultation Report? WSCC would wish to see how the key findings of consultation have driven forward the proposed scheme design. There is no mention of the Rochdale envelope approach within this chapter or acknowledged it will be included in section 4 of the table.	There will not be a specific ES chapter on consultation, but stakeholder engagement relevant to each technical assessment will be presented within the respective technical ES chapters. The alternatives ES chapter will also describe how consultation has helped inform the final Scheme design.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Guidance	Tabulated response	WSCC refers the Applicant to ‘West Sussex LLFA Policy for the Management of Surface Water’ (November 2018). Also, of relevance is the West Sussex Local Flood Risk Management Strategy (2013 – 2018).	These information sources have been reviewed and used to guide the Scheme design and outline drainage strategy.
General	Tabulated response	“Helping cyclists, walkers and other vulnerable users of the network” – this would be better phrased “Non-Motorised Users (NMU’s) and other vulnerable users of the network so equestrians are considered suitably.	This comment is noted and this terminology will be used in the ES.
General	Tabulated response	Reference to walkers and cyclists is made, but it would be better to refer to these as NMU’s so this also incorporates equestrian users. The Bridleway network is heavily severed by this proposal and the existing situation.	This comment is noted and this terminology will be used in the ES.
General	Tabulated response	The paragraph states that the proposed scheme lies outside the SDNP boundary. As the proposed scheme includes detrunking of the existing A27 between Crossbush and Tye Lane, the proposed scheme is partially in the SDNP. The paragraph should be amended accordingly.	This is made clear in the PEI Report.  The preferred route was designed to remain outside of the SDNP as far as possible, which is an important consideration in planning policy terms. However, the Eastern end of the Scheme proposals, which was common to all the routes considered at the time of the

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
			<p>Preferred Route Announcement, cannot be constructed without some minor incursions into the National Park. This is, primarily, related to works within the existing highway boundary of the A27 and are a direct consequence of the need to connect the new route with the existing highway infrastructure. In addition, some minor incursions are required to provide habitat enhancements in line with the statutory purposes of the National Park designation. These incursions are minor in nature.</p> <p>Furthermore, the de-trunking of the existing A27 carriageway may involve some works within the National Park given that a large section of it is located within the designated area.</p>
Enhancement and upgrade to Bridleways	Tabulated response	There appears to be interventions detailed to accommodate the existing PROW network, but there are various footpaths that appear to be accommodated that may benefit from enhancement and upgrade to Bridleways, improving the accessibility of the local network.	This will be given due consideration within the WCHAR and ES as needed.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Assessment	Tabulated response	There is also potential to improve walking cycling and horse-riding provision by connecting the scheme to the wider network of facilities for these users through improvements such as a shared path to connect the scheme to A284 Lyminster Bypass and FP2205, and along Ford Road to Arundel and Ford. These schemes are needed to meet the Government’s ambition to improve sustainable transport provision in this area (as outlined in RIS1). Failing to include these connections within the scope of the EIA will mean that a potential worst case assessment has not been undertaken.	This will be given due consideration within the WCHAR and ES as needed.
Affected properties	Tabulated response	The number of affected properties should be based upon latest survey information (including potential new housing developments), rather than those identified in the EAR, Chapter 11 (Ref 169).	This will be the case for the assessment reported in the ES. Impacts had not been calculated at the time of the EIA Scoping Report, hence the reference to the EAR.
Blue light response times	Tabulated response	Under potential impacts it is suggested that reference to the impact on blue light response times be referenced and considered as the EIA progresses, not just ‘access to healthcare’.	To be reported accordingly in the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
Design, Mitigation & Enhancement Measures	Tabulated response	Design, Mitigation & Enhancement Measures: Consideration should also be given to the creation of new wildflower grasslands on the new verges of the route in appropriate locations within the list of measures for reducing or offsetting effects on important ecological features. These might be established on nutrient-poor subsoil as being implemented by Highways England elsewhere in the country.	Where appropriate, species rich grassland will be included within the Landscape and Environment Masterplan for the Scheme.
Outline management plans.	Tabulated response	WSCC wishes to see commitments to monitoring in the PEIR/ES where required. It is recognised that monitoring is an important element in the management and verification of the actual proposed impacts. It is understood that the outline management plans, across a number of environmental topics, will be submitted along with the DCO application, a draft list of these should be included in the PEIR, including an OEMP.	Where required, details of monitoring will be included within the PEI Report and the ES. A first iteration of the Environmental Management Plan (EMP) will be appended to the ES and will accompany the DCO submission. This is referred to where required in the PEI Report.
Consultation	Tabulated response	All method statements for surveys, investigations and assessment methodology for relevant topics should be consulted upon and agreed with the relevant stakeholders in good time and	Where required, surveys and assessment methodology have been agreed with relevant stakeholders in advance. All stakeholder engagement will be described within the ES.

Topic or aspect	Scoping Opinion Reference	Comment	National Highways response
		discussions held on the COVID-19 restrictions in gaining required data.	
Assessment of landscape and visual effects	Tabulated response	<p>Whilst it is proposed that the assessment will consider operation phase year 1 in winter conditions (when visibility is greatest), the assessment of operation phase year 15 will be in summer conditions (when vegetation is in leaf, and therefore most effective at screening the proposed highway infrastructure and traffic). Assessing year 1 in the winter, but year 15 in the summer lacks logic, means the two assessments would not be comparable and would not offer an assessment of the worst case. WSCC request that the operational phases in year 1 and year 15 to be assessed in both winter and summer conditions to allow for a robust assessment to be presented.</p>	Year 1 and Year 15 will be assessed for both winter and summer in the ES

## Appendix 7-A Landscape and Visual Baseline

### Landscape baseline

#### Topography and hydrology

1. The topography of the area is strongly influenced by the underlying geology, with the elevated rolling chalk downland of the South Downs National Park (SDNP) north of the draft Order Limits, and a low-lying gently undulating coastal plain to the south.
2. The SDNP comprises a broad, elevated east-west band of chalk, with a steep north-facing scarp slope and a gradual dip slope to the south, which extends to the coastal plain. The eastern part of the SDNP (which the Scheme corridor is adjacent to) is characterised by several rivers, which drain south towards the English Channel. The western most of these rivers is the River Arun, which forms a broadly u-shaped valley with steep sides and a distinct flat floodplain through which the river meanders. The Arun Valley emerges from the SDNP at Arundel just north of the eastern end of the Scheme, and continues to meander south through a wide, flat valley floodplain towards Littlehampton.
3. The floodplain of the River Arun is characterised by a patchwork of criss-crossing ditches that drain the landscape towards the Arun. Upstream of Arundel there are several wetlands formed by these ditches, channels and ponds in the floodplain. The River Arun is navigable between the English Channel and Arundel and is tidal south of Arundel.
4. In the coastal plain, to the south of the SDNP, the floodplain of the River Arun is broad and flat, with limited vegetation cover giving it an open character. This allows far-reaching views towards the SDNP and Arundel. Either side of the floodplain the landscape is gently undulating with a very gradual fall from north-to-south towards the English Channel.
5. As shown on Figure 7-6 of the PEI Report, the Site lies in the transitional area between the steeper landform of the SDNP and the more gently undulating coastal plain.
6. At its western extent, the draft Order Limits lie at around 30 m Above Ordnance Datum (AOD) at the A27 western tie-in, before diverging from the existing A27 across land with a gentle cross-fall from north to south towards Binsted Rife.
7. Binsted Rife is a narrow and steep-sided valley between Walberton to the west and Binsted to the east. The landscape either side of Binsted Rife lies at around 15 m AOD, dropping to around 2 m AOD at the watercourse, which flows north to south centrally through the valley.
8. East of Binsted Rife a spur of land separates the rife from Tortington Rife to its east, with a further spur to the east separating Tortington Rife from the River Arun floodplain.

9. Tortington Rife is a narrow, flat bottom, steep-sided valley feature similar to Binsted Rife, with a low elevation of around 2 m AOD at the watercourse.
10. The spur between Tortington Rife and the River Arun floodplain has a high point of around 7 m AOD.
11. The River Arun floodplain lies between around 1 m and 2 m AOD.
12. East of the River Arun floodplain the land gently rises to between 15 m and 20 m AOD at the Crossbush roundabout, at the eastern extent of the Site.

### **Vegetation patterns**

13. The vegetation patterns contrast between the open character of the River Arun floodplain, and the more well-vegetated and enclosed landscape south and west of the Binsted Wood Complex.
14. The landscape of the southern coastal plain is characterised by medium to large arable fields with low or no hedgerows, and very limited woodland or tree cover. Tree cover generally comprises shelterbelts or intermittent tree cover along features such as settlement edges, roads, and rail infrastructure. As such, the landscape has an open character.
15. The landscape of the northern part of the coastal plain is more varied, with increased tree cover and more mature hedgerows along the country lanes, and along the rife valleys. This includes shaws and broader woodland belts alongside the rifes and extending out as green corridors from woodland to the north. This gives the western part of the Scheme corridor a semi-enclosed character. The River Arun floodplain retains an open character up to the settlement of Arundel and extending north beyond Arundel along the valley through the SDNP.
16. To the north of the draft Order Limits, the SDNP are characterised by extensive areas of ancient woodland (the Binsted Wood Complex), and ancient woodland to the north of Binsted Rife, both of which are severed from broader areas of ancient woodland north of the existing A27. The extent of woodland in this area provides a strong degree of enclosure.

### **Settlement and land use**

17. Settlement in the study area contrasts between the SDNP and coastal plain landscapes. The SDNP has more limited settlement, which is principally dispersed along the base of the Arun valley. The coastal plain is more developed with settlement increasing in scale and density towards the coast, which is lined by the large towns of Bognor Regis, Littlehampton and Worthing.
18. The town of Arundel lies approximately 700 m to the north of the draft Order Limits at its closest point and is bisected by the existing A27. The town is split between the older part of the town around Arundel Castle and Arundel Cathedral to the north of the A27, and mainly post-war residential estates of the town mainly lying south of the A27 with a few examples of inter-war properties. Arundel lies on the edge of the SDNP, rising up the

- steep slopes of the chalk downland. This gives the castle and cathedral a prominent position overlooking the Arun valley and the coastal plain to the south.
19. The draft Order Limits lie to the south of Arundel from Crossbush in the east through Tortington and Binsted, and on the northern edge of Walberton to tie-in with the A27 close to Fontwell.
  20. Crossbush lies north of the existing A27 at the Crossbush roundabout and has a linear settlement pattern along Crossbush Lane. The settlement includes dispersed leisure and commercial properties along the road corridor, including hotels and highway service areas. Crossbush is approximately 1 km south east of Arundel with Arundel railway station between the two.
  21. Tortington lies to the east of the Tortington Rife and has developed around Tortington Manor (formerly Tortington House). It comprises a cluster of residential buildings at the redeveloped manor, St Mary's Church, farm buildings which include a recent residential conversion, and other scattered properties along Tortington Lane.
  22. Binsted comprises a dispersed linear settlement pattern along Binsted Lane. Binsted Lane follows the eastern side of Binsted Rife, with a U-shaped curve at its southern end between Binsted Rife and Tortington Rife, which turns north towards Binsted Wood. Residential properties are dispersed intermittently along this road, with the Church of St Mary, Binsted Lane on the western side of the road overlooking the northern end of Binsted Rife, and a plant nursery on the eastern side of the road.
  23. Walberton lies on the western side of Binsted Rife, again with a principally linear settlement pattern along The Street to the west of Yapton Lane. A recent housing development adjoins part of the draft Order Limits to the north. Avisford Park Golf Course lies north of Walberton, which extends east and includes Binsted Rife.
  24. To the west of Walberton the settlement pattern is more scattered between the village and Fontwell, which lies west of the A27 western tie-in.
  25. Land use around the draft Order Limits is principally agricultural, with areas of woodland, village settlement, a golf course, and small commercial uses typical of a rural environment such as camping and a plant nursery.
  26. In the wider study area, the landscape north of the draft Order Limits retains a more rural character and land uses, whilst south of the draft Order Limits there is more development and larger-scale commercial plant nurseries, solar farms and small industrial areas around Barnham, Yapton and Littlehampton.

## Movement and connectivity

### *Roads*

27. The principal east-west road through the study area is the existing A27, which is dual carriageway to the west of Arundel. It reduces to a single carriageway through Arundel and on to the Crossbush roundabout whereafter it again becomes a dual carriageway.
28. The existing A27 bisects the town of Arundel, with the Ford Road roundabout located centrally within the town. This provides a junction between the A27, A284, Ford Road and Maltravers Street. The A27 link south east from this roundabout is a current bypass to Arundel built in the 1970s on a low embankment across the floodplain, with a viaduct across the River Arun. The only other crossing of the River Arun at Arundel is the Queen Street bridge approximately 500 m east of the existing A27.
29. From Arundel, the A284 provides the primary link north into the SDNP up to a junction with the A29. The A29 heads south west to join the A27 at Fontwell west of the A27 western tie-in.
30. There are two principal road links south from Arundel; Ford Road and the A284. Ford Road is a single-carriageway road that extends south from the Ford Road roundabout in Arundel towards Ford / Yapton / Climping along the western edge of the Arun floodplain, and the A284 is a main road that heads south from Crossbush roundabout towards Lyminster and Littlehampton.
31. From west to east, the draft Order Limits cross Tye Lane and Yapton Lane (B2132) between the western tie-in and Binsted Rife. Tye Lane is a single-carriageway road that connects Walberton with the A27, and Yapton Lane is a B-road which links the A27 with Walberton, Barnham and Yapton.
32. East of Binsted Rife, the draft Order Limits cross Binsted Lane across its U-shaped southern bend, such that it crosses the lane twice. Binsted Lane is a single-track lane that links with the A27 twice; at a point just east of Binsted Rife to its west, and at a point along the A27 west of Arundel near Arundel Cricket Club to its east.
33. At Tortington, the draft Order Limits cross Tortington Lane; a single-track lane that connects Ford Road with the A27 at the same point as Binsted Lane.
34. East of Tortington Lane, the draft Order Limits cross Ford Road.

### *Public transport*

35. The closest railway station to the draft Order Limits is Arundel Station, which is part of the Southern railway network and is located on the existing A27 between Crossbush and Arundel. The Arun Valley Railway Line then heads north up the Arun valley through the SDNP towards Horsham and on to London Victoria. Southwards the nearest station on the line is Ford, approximately 1.2 km south of the draft Order Limits, and beyond there are

links to Barnham, Littlehampton, and further afield to Chichester and Portsmouth. The draft Order Limits cross the railway approximately 400 m south of Arundel Station, with the railway forming the eastern boundary of the Arun floodplain on a slight embankment.

36. West Sussex provides a bus service along the existing A27 between Arundel and Walberton, and beyond to Fontwell and towards Chichester. There are also bus links north from Arundel into the SDNP, and south towards Lyminster and Littlehampton.
37. The Environmental Statement (ES) will refer to the *West Sussex Transport Plan*, especially with regard to its strategic objectives to protect and enhance landscape character (Ref 7-34)<sup>1</sup>.

*Public rights of way*

38. From west to east, the draft Order Limits cross the following PRoW:
- Bridleway 392 north of Walberton to the existing A27.
  - Footpath 350 between Walberton and Binsted across the Binsted Rife.
  - Footpath 354 across the U-shaped southern end of Binsted Lane.
  - Footpath 3403 north of Tortington.
  - Footpath 206 along the western bank of the River Arun.
  - Footpath 2207 between Lyminster and Arundel Station.
39. The study area includes an extensive network of PRoW through the SDNP. This network is somewhat severed from the landscape to the south by the existing A27, which separates PRoW in the Binsted Wood Complex from Rewell Wood to the north, and similarly severs footpaths between the north and south of Arundel.
40. The Monarch's Way promoted route approaches Arundel across the SDNP from the east, passes around the north of the town and up the west side of the Arun Valley northwards from Arundel. The South Downs Way National Trail is located on the north eastern edge of the study area and extends east-west across the relatively higher landform of the SDNP.
41. There are large areas of access land in the SDNP (taken from Ordnance Survey 1:25 000 mapping). This includes Slindon Common which is located adjacent to the Scheme corridor and is part of a wider National Trust estate.
42. The Binsted Wood Complex, although not formally open access land, has an extensive network of permissive paths and PRoW's.

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<sup>1</sup> For all references not referred to as 'Appendix Ref' please refer to PEI Report Volume 2b, Chapter 7: Landscape and Visual

### Cycle

43. There are no national cycle trails in close proximity to the draft Order Limits, the closest being part of National Cycle Network Route 2 between Littlehampton and Bognor Regis approximately 3.5 km south of the Site.
44. Other dedicated cycle routes or cycle lanes are also very limited throughout the study area.

### Tranquillity

45. *GLVIA 3* (Ref 7-25) defines tranquillity as:

*“a state of calm and quietude associated with peace, considered to be a significant asset of landscape.”*

46. With reference to tranquillity mapping published by the Campaign for the Protection of Rural England (CPRE) (Appendix Ref 7-A-2), and the SDNP Authority *Tranquillity Study* (Appendix Ref 7-A-3), the relative tranquillity across the study area is varied. These studies have assessed the tranquillity as ‘low’ around the boundaries of the SDNP and larger settlements, increasing to ‘high’ in the central sections of the SDNP, away from the Scheme. Tranquillity will be assessed and described further in the ES, with reference to fieldwork and published Landscape Character Assessments (LCAs).

### Published landscape character assessments

47. This section summarises the Landscape Character Types (LCTs) and LCAs which fall within the study area, their key characteristics, and any management guidelines or environmental opportunities which may be relevant (refer to Figure 7-8 and Figure 7-9 of the PEI Report).

### Natural England National Character Areas

48. At the national level, National Character Areas (NCAs) have been defined and described by Natural England.
49. England has been divided into 159 NCAs, each defined by a unique combination of landscape, biodiversity, geodiversity, and economic and cultural activity.
50. The Natural England NCA profiles are intended to inform and contribute towards policy formulation and local planning, action and development. They are broad scale and provide useful context to an area, and guidelines on strategic environmental opportunities. The Scheme lies within the following NCAs:
  - a. *NCA 126 South Coast Plain* (in which the Site is principally located) (Ref 7-46).

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Appendix Ref 7-A-2 Tranquillity Map – England. The Countryside Charity. (2007).

Appendix Ref 7-A-3 Tranquillity Study 2017. South Downs National Park Authority. (2017).

- b. *NCA 125 South Downs* (in which part of the Scheme is located, associated entirely with the de-trunking of the existing A27) (Ref 7-45).

*NCA 126 South Coast Plain*

51. The South Coast Plain NCA is a flat, coastal landscape with an intricately indented shoreline lying between the dip slope of the South Downs and the English Channel.

**NCA 125 South Downs**

52. The South Downs NCA comprises a ‘whale-backed’ spine of chalk stretching from the Hampshire Downs in the west to the coastal cliffs of Beachy Head in East Sussex. The majority of the area falls within the SDNP, in recognition of its natural beauty and importance for access and recreation.

**A Strategy for the West Sussex Landscape, 2005 (Ref 7-47)**

53. *A Strategy for the West Sussex Landscape* identifies broad LCAs at a scale relevant to the county. Most of the Scheme lies within the following LCAs:

- a. LCA SC8 Fontwell Upper Coastal Plain.
- b. LCA SC10 Lower Arun Valley.
- c. LCA SC12 Angmering Upper Coastal Plain.

54. In addition, a small part of the Scheme related to the proposed de-trunking of the existing A27 falls within LCA SD1 Western Downs.

55. The strategy identifies key characteristics, and landscape and visual sensitivities for the LCAs, which are summarised below.

**LCA SC8 Fontwell Upper Coastal Plain**

56. This LCA forms a transition between the open lower coastal plain to the south and the wooded South Downs to the north. Part of the draft Order Limits west of Ford Road lie within this LCA.
57. The key characteristics of the LCA include:
- a. *“A transitional landscape”.*
  - b. *“Clear views to the higher ground of the Downs to the north”.*
  - c. *“A good cover of woodland and trees, with a high percentage of ancient woodland”.*
  - d. *“Mainly gently undulating farmland enclosed by woods with numerous hedgerows”.*
  - e. *“Pattern of small to medium sized pastures, arable fields, livestock farming and market gardening”.*
  - f. *“Winterbourne chalk streams emanate from this area”.*

- g. *“Wealth of historic landscape features including historic parklands, many ancient woodlands and earthworks”.*
  - h. *“Area is well settled with scattered pattern of rural villages and farmsteads”.*
  - i. *“Leafy or wooded settlements”.*
  - j. *“Intimate hidden valleys at Binsted”.*
  - k. *“Winding hedged or wooded lanes.”*
58. Key relevant landscape and visual sensitivities for LCA SC8 include:
- a. *“Inappropriate or visually intrusive road improvements”.*
  - b. *“Views from the higher ground of the South Downs to the north and to Arundel.”.*

### **LCA SC10 Lower Arun Valley**

59. The Lower Arun Valley character area extends from where the River Arun leaves the downland at Arundel; its extensive drained floodplain pastures merge with the Coastal Plain. Part of the draft Order Limits between Ford Road and Crossbush lie within this LCA.
60. The key characteristics of the LCA include:
- a. *“Extensive areas of drained pasture and floodplain”.*
  - b. *“Wide wandering river course throughout, with meanders increasing in size to the south. Tidal character”.*
  - c. *“Meandering river, fed by rifes and dykes with adjacent reed beds”.*
  - d. *“Stretches of engineered concrete river banks”.*
  - e. *“Very shallow valley sides, consisting of slightly undulating farmland or the urban edge of the coastal development, in particular Littlehampton”.*
  - f. *“Little riverside vegetation”.*
  - g. *“Intrusive surrounding suburban activities”.*
  - h. *“Prominent railway on embankment”.*
  - i. *“Extensive high-level views onto the area”.*
  - j. *“Key close dramatic views of Arundel (castle, Roman Catholic cathedral, parish church, clustered hillside housing) from the south”.*
  - k. *“Seaward views from elevated positions”.*
  - l. *“Long views of river valley towards the Chalk Downs and Arundel from the south.”*
61. Key relevant landscape and visual sensitivities for LCA SC10 include:
- a. *“Loss of pastoral character of the valley”.*
  - b. *“Change to open character”.*

- c. *“Loss of long views to Arundel and the Downs”.*
- d. *“Change in important views including those of settlements and landmarks”.*
- e. *“Loss of wetland area”.*
- f. *Change to river banks and drainage by unsympathetic reprofiling or flood protection measures.”*

### **LCA SC12 Angmering Upper Coastal Plain**

62. This LCA lies in the south of the county between Crossbush to the west and Highdown Hill in the east. It forms a transition between the open lower Coastal Plain to the south and the wooded downs to the north. The eastern part of the draft Order Limits around Crossbush lie within this LCA.
63. The key characteristics of the LCA include:
- a. *“Very gently undulating landform more intricate in the east, encompassing the distinctive landscape of Highdown Hill (an isolated chalk hill)”.*
  - b. *“Mainly gently undulating farmland enclosed by woods with frequent hedgerows”.*
  - c. *“Strong network of hedgerows, hedgerow trees and medium to large blocks of woodlands”.*
  - d. *“Pattern of small to medium-sized pastures and arable fields”.*
  - e. *“Wealth of historic landscape features including historic parklands, many ancient woodlands and earthworks”.*
  - f. *“A scattering of historic nucleated flint villages, hamlets and farmsteads dot the area accessed by rural lanes mostly linked by the A27 crossing the area east to west”.*
  - g. *“Apart from the busy A27, roads are mostly winding hedged or wooded lanes”.*
  - h. *“Criss-crossed by numerous rural tracks, byways and rights of way.”*
64. Key relevant landscape and visual sensitivities for LCA SC12 include:
- a. *“Loss of extent and diversity of woodland cover, much of which is ancient woodland”.*
  - b. *“Loss of historic landscape features due to changes in land management practices and estate fragmentation”.*
  - c. *“Inappropriate design and scale of road improvements. Apart from the main A27, roads are rural in character, often leading on to historic trackways and byways”.*
  - d. *“Loss of rural quality of rights of way network of tracks and byways, through inappropriate development.”*

### **Arun Landscape Study, 2006 (Ref 7-48)**

65. The *Arun Landscape Study* was prepared to consider the landscape and visual amenity aspects of development choices in Arun district. The study identifies discrete LCAs principally outside of the SDNP, providing a description of each and identifying their sensitivity, value and capacity to development. It should be noted this study predates current best practice relating to landscape character and sensitivity assessment.
66. The majority of the de-trunking part of the Scheme along the existing A27 route lies outside of the *Arun Landscape Study* area boundary. The draft Order Limits fall within the following LCAs identified by the Study:
- a. LCA 24 Fontwell Common.
  - b. LCA 25 Avisford Park.
  - c. LCA 26 Binsted Upper Coastal Plain.
  - d. LCA 27 Binsted Park / Wood.
  - e. LCA 28 Withy Rife.
  - f. LCA 32 Tortington Arun Valley Sides.
  - g. LCA 34 Middle Arun Valley Floor.
  - h. LCA 37 Lyminster Arun Valley Sides.
  - i. LCA 36 Crossbush Arun Valley Sides.
  - j. *LCA 24 Fontwell Common*
67. The LCA is described as a woodland mosaic with undulating landform at a point of transition between the South Downs and upper coastal plain, and with properties in generous plots. The LCA is noted as being bisected by the existing A27 dual carriageway.
68. The LCA is described as having a moderate landscape sensitivity, is in good condition with a woodland mosaic being an inherent landscape quality.
- #### **LCA 25 Avisford Park**
69. The LCA is described as an enclosed landscape with manicured lawns and mature ornamental trees. There are arable fields, parkland and a golf course associated with the hotel/country club on the north-eastern edge of Walberton.
70. The LCA is described as having a substantial landscape sensitivity for its manicured parkland with woodland and hedged boundaries in the setting of Walberton.
- #### **LCA 26 Binsted Upper Coastal Plain**
71. The LCA is described as an undulating agricultural landscape at the foot of the downs, with relatively large-scale, open arable fields on elevated

ground, separated by 'hidden' valleys. There is rising ground to the north, which is substantially wooded, and contains views. There are longer views south and east towards the Arun Valley. Binsted Lane is noted as a single-track lane with scattered development along it.

72. The LCA is described as having a substantial landscape sensitivity for its hedged and enclosed landscape that has ecological value, and which is largely divorced from settlement.

#### **LCA 27 Binsted Park / Wood**

73. The LCA is described as predominately arable fields and parkland, with significant vegetation that provides enclosure.
74. The LCA is described as having substantial landscape sensitivity for its predominantly hedged arable fields and parkland, and rural quality.

#### **LCA 28 Withy Rife**

75. The LCA is described as being formed by prominent narrow valleys leading down from the South Downs to a subtler, wider valley feature. It is heavily vegetated with trees and scrub, and visibility within the LCA is very limited.
76. The LCA is described as having substantial landscape sensitivity for its intact hedgerow structure, moderate ecological value, and strong vegetation pattern.

#### **LCA 32 Tortington Arun Valley Sides**

77. The LCA is described as predominately enclosed arable fields of varying size, with pasture and recreation adjacent to Arundel to the north. The LCA surrounds Tortington in the east and abuts the Arun Valley Floor and is bisected by minor roads.
78. The LCA is described as having substantial landscape sensitivity for its relatively intact hedgerow structure with woodland, and its prominent rural valley slopes.

#### **LCA 34 Middle Arun Valley Floor**

79. The LCA is described as an open valley floor, which is predominately pasture with occasional arable fields. It is exposed with wide-open views, including north to Arundel.
80. The LCA is described as having major landscape sensitivity for its intact valley floor, which is of high ecological value, has a rural quality, and is highly visible from the surrounding area.

#### **LCA 37 Lyminster Arun Valley Sides**

81. The LCA is described as predominately pasture with areas of parkland to the east of the busy Lyminster Road.
82. The LCA is described as having substantial landscape sensitivity for its pastoral landscape with hedgerows and small areas of estate parkland.

### **LCA 36 Crossbush Arun Valley Sides**

83. The LCA is described as predominantly pasture and parkland with some arable land. It is bounded by the busy existing A27 to the south and abuts the Arun Valley to the west. Views are contained by boundary vegetation and woodland, but with some open views of Arundel and the River Arun.
84. The LCA is described as having substantial landscape sensitivity for its ancient woodland, although its rural quality is affected by the existing A27 dual carriageway.

### **South Downs Landscape Character Assessment, 2020 (Ref 7-49)**

85. The *South Downs Landscape Character Assessment* identifies LCTs and LCAs within the SDNP.
86. The majority of the Scheme lies outside of the SDNP (and the identified LCTs/LCAs), however the part associated with de-trunking of the existing A27 is within the SDNP. The Scheme falls within the following LCTs and LCAs identified by the study:
- a. LCT B Wooded Estate Downland, and LCA B1 Goodwood to Arundel Wooded Estate Downland.
  - b. LCT F Major Chalk River Floodplains, and LCA F4 Arun Floodplain.
  - c. LCT G Major Chalk Valley Sides, and LCA G4 Arun Valley Sides.
  - d. LCT R Upper Coastal Plain, and LCA R1 South Downs Upper Coastal Plain.
87. Descriptions and sensitivities of each LCT and LCA are provided in the *South Downs Landscape Character Assessment* and those for the LCAs are summarised below.
- a. LCA B1 Goodwood to Arundel Wooded Estate Downland
88. This LCA is described within the published study as follows:
- “This character area comprises the rolling downs to the south of the east–west running Lavant Valley. The western and northern boundaries are defined by the convoluted edge of the Lavant Valley, the eastern boundary is defined by the Arun Valley, and the southern boundary adjoins the Upper Coastal Plain”.*
89. The key characteristics of this LCA include:
- a. *“Folded downland topography masked by large woodland blocks including oak, birch and holly on the thicker soils, and beech dominating on thinner soils;*
  - b. *“Rare yew and beech woodland at Fairmile Bottom, plus a number of chalk grassland sites contribute to biodiversity”.*
  - c. *“A landscape transformed in the 18th century with the establishment of great landed estates of Goodwood and Arundel, with much of the*

*downland bought up to create vast holdings and planted with woodland for economic and aesthetic reasons”.*

- d. *“Woodland is interlocked with straight-sided, irregular open arable fields linked by thick hedgerows”.*
  - e. *“Rare survival of ancient settlement, field systems and other archaeological features beneath the woodland, for example the earthworks at Rewell Wood and Bexley Bushes”.*
  - f. *“Iron Age hill fort (The Trundle) on St Roche’s Hill provides a strong sense of historical continuity and an important landmark feature with commanding views over the coastal plain to the south”.*
  - g. *“A low density of dispersed settlement, characterised by scattered farmsteads – most of 18th -19th century origin – plus nucleated villages of Anglo-Saxon origin at Slindon and Eartham”.*
  - h. *“Goodwood racecourse stadium is a highly visible landmark on the downs”.*
  - i. *“Large number of designed parkland landscapes and remnant deerparks with important visual influences – estate walls, avenues, follies as at Arundel, Goodwood, West Dean, Halnaker Park, Selhurst Park, and Dale Park”.*
  - j. *“A deeply rural secluded landscape with large tracts devoid of roads and settlement. However, parking places, signed walks, picnic sites, a good network of public rights of way and Goodwood Country Park provide many opportunities for recreational use of the landscape”.*
  - k. *“Panoramic views across the coastal plain from high, open ridges, as well as northwards across the Lavant Valley, and eastwards into the Arun Valley.”.*
90. Key landscape sensitivities for LCA B1 are given as follows:
- a. *“The remnants of historic deerparks at East Dean, Selhurst and Arundel”.*
  - b. *“The historic parkland landscapes Arundel, Goodwood, West Dean, Halnaker Park, Selhurst Park and Dale Park”.*
  - c. *“The panoramic views across the coastal plain, including representative views from The Trundle and from Bignor Hill identified in the View Characterisation and Analysis report”.*

#### **LCA F4 Arun Floodplain**

91. This LCA is described within the published study as follows:

*“The Arun Floodplain is located on the flat valley floor of the Arun Valley. The floodplain extends from Amberley in the north to Arundel in the south. The eastern and western boundaries of the floodplain are clearly defined by the break of slope between the flat*

*floodplain and surrounding land - these boundaries also coincide with the extent of underlying river alluvium. The floodplain continues into the Arun (Wealden) Floodplain to the north, and southwards, to Littlehampton and the sea”.*

92. The key characteristics of this LCA include:
- a. *“Flat valley floor of the large U-shaped Arun Valley that forms a gap in the South Downs at Arundel”.*
  - b. *“A landscape of apparent large and expansive scale as a result of the flat landform, consistent pasture land cover, lack of vertical elements and far-reaching views across the open floodplain. Views are contained by the adjacent valley sides”.*
  - c. *“Contains the meandering course of the tidal River Arun, which flows between artificial flood banks”.*
  - d. *“Artificially straightened sections of river associated with an industrial history”.*
  - e. *“Periodically waterlogged silty soils support permanent pasture, within fields reclaimed from the floodplain, giving the floodplain a lush, pastoral character and supporting an important ecological flora”.*
  - f. *“The floodplain is etched by a geometric grid of narrow channels (‘wet fences’) which divide pastures”.*
  - g. *“Groups of willows and alders occur sporadically alongside the river and drainage channels providing important visual and ecological features. The rare black poplar is also a feature of the floodplain”.*
  - h. *“General absence of settlement, with the exception of modern development on the edge of Arundel (a former port)”.*
  - i. *“The low incidence of woodland and trees results in a large scale, open landscape with extensive views across the floodplain”.*
  - j. *“Impressive views to Arundel Castle at the ‘mouth’ of the valley.”*
93. Key landscape sensitivities for LCA F4 are given as follows:
- a. *“Riverside woodland, including groups of mature willow and alder, and the rare black poplar, that provides habitats, helps to regulate the climate and protect soils from erosion”.*
  - b. *“Arundel Mill and the former port of Arundel which lies just outside the area, providing a sense of history and sense of place”*
  - c. *“Impressive views of Arundel Castle that creates a visual landmark and sense of history (identified in the South Downs National Park: View Characterisation and Analysis report – Ref 7-50)”.*
  - d. *“Views from the adjacent downs across the floodplain (including representative views identified in the South Downs National Park: View Characterisation and Analysis report – Ref 7-50)”.*

## LCA G4 Arun Valley Sides

94. This LCA is described within the published study as follows:

*“The Arun Valley Sides enclose the floodplain of the River Arun that cuts through the South Downs between Amberley in the north and Arundel in the south. The bottom edge of each valley side is clearly defined by a marked change in topography to the flat floodplain - this also coincides with the extent of underlying river alluvium. The upper edge of the valley is defined by the crest of the slope and has been drawn along the apparent skyline of the valley as seen from the roads in the valley bottom. To the north the valley sides form a transition to the scarp footslopes, and to the south the valley sides meet the National Park boundary. There are views from the valley sides over the Arun floodplain”.*

95. The key characteristics of this LCA include:

- a. *“Valley sides carved from chalk, relatively steep along their whole length, and deeply indented by a system of dry valleys”.*
- b. *“Disused chalk quarries above Amberley, relating to the production of lime in the 19th century, are now recognised for their biodiversity interest and are designated as a LWS”.*
- c. *“Pasture, chalk grassland and woodland occupy steeper slopes, for example at Peppering Down, Warningcamp Hill and New Down, and Coombe Wood – these are important for biodiversity and often provide open public access”*
- d. *“The eastern valley side is composed of large-scale arable fields while the western valley side, by comparison, consists largely of surviving early enclosures of late medieval date, reflecting the histories of land use and ownership”.*
- e. *“Arundel Park, a major 18th century landscape park, has a major influence on the wooded character of the western valley sides”.*
- f. *“The valley sides contain a fragmented road network of narrow rural lanes which often end in dead ends”*
- g. *“A string of villages are located along the lower valley sides e.g. Houghton, North Stoke, South Stoke, Offham, Burpham, Wepham, surrounded by fields enclosed in the later medieval period”.*
- h. *“Includes the northern outskirts of the town of Arundel, a former port on the Arun. Arundel Castle is a particularly distinctive landmark standing at a commanding position at the southern end of the Arun valley”.*
- i. *“The limited road network ensures the valley sides provide a tranquil, rural setting to the River Arun and its floodplain.”.*

96. Key landscape sensitivities for LCA G4 are given as follows:

- a. *“Early enclosures of late medieval date on the western valley side”.*
- b. *“The tranquil character of the valley resulting from incomplete and minor road systems”.*
- c. *“The small blocks of late medieval and 18th -19th century enclosure around the medieval settlements of Houghton, North Stoke, South Stoke, Offham, Burpham, and Wepham”.*
- d. *“The swathes of chalk grassland and woodland on steep valley sides, for example at Peppering Down, Warningcamp Hill and New Down, and Coombe Wood”.*
- e. *“The historic designed parkland landscape at Arundel Park”.*
- f. *“Views to Arundel Castle, a particularly distinctive landmark standing at a commanding position at the southern end of the Arun Valley”.*

### **LCA R1 South Downs Upper Coastal Plain**

97. This LCA is described within the published study as follows:

*“The South Downs Upper Coastal Plain character area is a narrow strip of land on the southern boundary of the National Park between Funtington and Durrington. It forms a transition between the chalk downs to the north and the lower coastal plain to the south (outside the National Park). The northern boundary of the area therefore represents a transition but is drawn along a line that represents a change in underlying geology. The southern boundary of the character area is formed by the National Park boundary, but in reality the South Downs Upper Coastal Plain landscape extends beyond the National Park boundary”.*

98. The key characteristics of this LCA include:

- a. *“The northern edge of the low lying, undulating, fertile strip of land between the dipslope of the South Downs and the sea”.*
- b. *“The underlying geology (upper chalk) is masked by drift deposits of ‘Head’ (weathered and broken up material) at the foot of the dipslope which gives rise to stony fertile soils”.*
- c. *“The outlying chalk ridge at Highdown Hill is a distinctive feature and is separated from the chalk dipslope to the north by a narrow clay vale”.*
- d. *“Drains, ponds and streams around Ashling, including the source of the Bosham Stream, and designed ponds at Ashling Park, provide important ecological features in the local context”.*
- e. *“Mixture of field sizes and shapes supporting a mixture of pasture and arable – vast fields between East Lavant and Halnaker are reminiscent of the medieval open field landscape that formerly existed here”.*
- f. *“A strong network of hedgerows, hedgerow oaks and small woodlands create structure – woodlands form important visual and ecological links*

*with the wooded downs to the north. Extensive woodland cover in the east creates a distinctive dark horizon in views from the A27”.*

- g. “The clay vale between the chalk dipslope in the north and the outlying chalk ridge at Highdown Hill was probably assarted from the late Saxon period onwards, producing the irregular patchwork of early enclosures still visible around Ecclesden Farm (east of Angmering). Blocks of recent enclosure mark areas of former common e.g. at Slindon”.*
  - h. “Nucleated historic villages e.g. Funtington, West Ashling, East Ashling, Mid Lavant, and East Lavant, are located along the foot of the dipslope. Characteristic building materials include flint and brick”.*
  - i. “Registered Park and Garden at Highdown and other historic parklands at Ashling, Goodwood, Slindon and Binsted, contribute landscape features such as avenues, parkland trees, and woodland”.*
  - j. “A wealth of archaeological features indicating the long history of the landscape, including the Bronze Age and Iron Age earthworks at Highdown Hill and the series of Iron Age linear boundaries defining an area of high status settlement on the outskirts of Chichester at ‘Devil’s Ditch’.”*
  - k. “Crossed by narrow rural roads, many of which continue up the dipslope of the chalk onto the chalk downs”.*
  - l. “Sand and gravel pits indicate the economic value of the underlying drift deposits”.*
  - m. “Views over the coastal plain and towards the sea from Highdown Hill.”*
99. Key landscape sensitivities for LCA R1 are given as follows:
- a. “The wetland habitats around Ashling, including the spring, ponds, and neutral grassland which mark the source of Bosham Stream, and designed ponds at Ashling Park”.*
  - b. “Species rich chalk grassland at Highdown Hill”.*
  - c. “Former common land e.g. at Slindon, which still has remnant of its former character even if only in place name”.*
  - d. “Archaeological features such as the ‘Devil’s Ditch’ and at Highdown Hill which could be vulnerable to intensive farming methods”.*
  - e. “Nucleated medieval villages of Funtington, West Ashling, East Ashling, West Lavant, and East Lavant, and their secluded, rural settings formed by small, hedged fields and woodland of medieval origin”.*
  - f. “Areas of historic parkland and woodland at Slindon Park, Ashling Park, Binsted Park and Goodwood Park”.*
  - g. “The irregular patchwork of assarts south of the A27, e.g. around Ecclesden Farm (east of Angmering)”.*

- h. *“The visibility of this landscape from the adjacent downs, for example from the viewpoint at The Trundle”.*
- i. *“The panoramic views towards the sea from Highdown Hill”.*

## Visual baseline

### Viewpoints

100. The proposed viewpoints are detailed in Table 7-A-1 below.

**Table 7-A-1: Proposed viewpoints**

Viewpoint number	Location	Receptor type	Reason for inclusion
1	Footpath 393_1, south of Slindon Common (along border of SDNP)	Recreational	Representative of views experienced by people walking on the edge of Slindon Common.
2	Copse Lane	Residential	Representative of views experienced by residents of Copse Lane.
3	Bridleway 392, west of Woodlands Farm	Recreational	Representative of views experienced by users of Bridleway 392.
4	Baycombe Lane, east of Slindon (within SDNP)	Recreational and road users	Representative of views from the east of Slindon. Also representative of users of the nearby community hall off School Hill to the south on slightly lower ground.
5	Bridleway 392, west of Hooe Farm	Residential and recreational	Representative of views experienced users of Bridleway 392 and residents of Hooe Farm.
6	North Pound, Walberton	Residential	Representative of views of residents from the northern edge of Walberton.

<b>Viewpoint number</b>	<b>Location</b>	<b>Receptor type</b>	<b>Reason for inclusion</b>
7	Tye Lane, west of 'The Barn' (along boundary of SDNP)	Residential and road users	Representative of residents of Hooe Farm House and The Barn.
8	Footpath 333, Walberton	Residential, recreational, institutional and road users	Representative of views of residents from Walberton, north from Avisford Park Road. Noting that the Avisford Grange residential development is under construction to the north. Also representative of people at the nearby Walberton School and playing fields.
9	Yapton Lane, west of Walberton Farm	Residential and road users	Representative of views of residents of Walberton Farm to the north.
10	Junction of Yapton Lane / Hedgers Hill (along boundary of SDNP)	Residential and road users	Representative of views experienced by residents on Yapton Lane and Hedgers Hill.
11	Bridleway 336 (within SDNP)	Recreational	Representative of views experienced by people using Bridleway 336.
12	Footpath 350, west of Binsted Lane	Recreational	Representative of people walking between Walberton and Binsted.
13	Footpath 350, north of St Mary's Church	Recreational and church users	Representative of views from St Mary's Church.

<b>Viewpoint number</b>	<b>Location</b>	<b>Receptor type</b>	<b>Reason for inclusion</b>
14	Binsted Lane	Residential and road users	Representative of residents and road users within Binsted.
15	Bridleway 338, north of Binsted (along boundary of SDNP)	Recreational	Representative of recreational views from Bridleway 338.
16	Footpath 354 and Oakley Cottages	Residential and recreational	Representative of views of residents of Oakley Cottages and users of Footpath 354.
17	Footpath 342 (within SDNP)	Recreational	Representative of people walking on Footpath 342.
18	Binsted Lane and Grove Cottages	Road users and residential	Representative of residential views from Binsted Lane.
19	Binsted Lane and Fairmeads Farm	Road users and residential	Representative of residents of Fairmeads Lane.
20	Bridleway 415 (within SDNP)	Recreational	Long distance views from Bridleway 415 and Long Lane.
21	Footpath 3402, Broad Green Cottages	Recreational and residential	Representative of residents of Broad Green Cottages and views from Footpath 3402.
22	Footpath 361	Recreational	Representative of views west of Goose Green.
23	Footpath 342, Tortington Common (along boundary of SDNP)	Recreational	Representative of views from Tortington Common.

<b>Viewpoint number</b>	<b>Location</b>	<b>Receptor type</b>	<b>Reason for inclusion</b>
24	Tortington Lane and Broad Green Cottages	Road users and residential	Representative of residential views from Broad Green Cottages and users of Tortington Lane.
25	Tortington Lane and Tortington Manor	Road users and residential	Representative of views of residents of Tortington Manor and users of Tortington Lane.
26	Ford Road and Ford Station	Road users, residential and Rail passengers	Representative of people traveling by train, residents off Ford Road and people travelling along Ford Road.
27	Footpath 206 adjacent railway crossing River Arun	Recreational and rail users	Representative of people traveling by train and walking on Footpath 206.
28	Manor Farm, Ford Road	Residential and road users	Representative of views towards Arundel experienced by residents of Manor Farm and road users approaching Arundel.
29	Priory Lane	Residential and road users	Elevated views looking east from Priory Lane and residential properties as requested by the South Downs National Park Authority.
30	Stewards Rise	Residential and recreational	Representative of elevated views of residents south from Stewards Rise and near to Priory Road pocket park.
31	Footpath 206 (looking north)	Recreational	Representative of recreational views towards Arundel.

Viewpoint number	Location	Receptor type	Reason for inclusion
32	Footpath 206 (looking south)	Residential	Representative of recreational views leaving Arundel.
33	Hiorne Tower, Monarch's Way (within SDNP and Arundel Castle Registered Parks and Garden)	Recreational	Representative of views from the SDNP along Monarchs Way as requested by the South Downs National Park Authority.
34	London Road and Cathedral of Our Lady and St Philip Howard and Monarch's Way (along boundary of SDNP)	Road users, visitors to Cathedral, Arundel Roman Catholic Cemetery, institutional and recreational	Views south from "London Road, in the vicinity of the Roman Catholic cemetery" are noted in <i>Arun Local Plan Policy LAN DM2</i> (Ref 7-13) as contributing to the setting of Arundel. Views from London Road and users of the Monarch's Way promoted route. Also representative of those at St Philip's Catholic Primary School.
35	Mount Pleasant and Old Poor House	Road users and residential	Views south from "Mount Pleasant, in the vicinity of the Old Poor House" are noted in <i>Arun Local Plan Policy LAN DM2</i> (Ref 7-13) as contributing to the setting of Arundel. Views of road users along Mount Pleasant.
36	King Street	Road users and residential	Views south from "The northern ends of Mount Pleasant, King Street and Parsons Hill and at their junction with London Road" are noted in <i>Arun Local Plan Policy LAN</i>

Viewpoint number	Location	Receptor type	Reason for inclusion
			<i>DM2</i> (Ref 7-13) as contributing to the setting of Arundel. Views of road users along King Street.
37	Junction to Daltons Place from Arundel Relief Road on Fitzalan Road	Road users and residential	Views south from Fitzalan Road.
38	Junction of Kings Arm Hill and Maltravers Street	Road users and residential	Views south from “Kings Arm Hill and its junction with Maltravers Street” are noted in <i>Arun Local Plan Policy LAN DM2</i> (Ref 7-13) as contributing to the setting of Arundel. Views of road users along King’s Arm Hill and Maltravers Street. Also representative of people using Arundel Library, on lower ground to the south-west.
39	Bakers Arms Hill and Maltravers Street	Road users and residential	Southerly views from “Bakers Arms Hill and its junction with Maltravers Street” are noted in <i>Arun Local Plan Policy LAN DM2</i> (Ref 7-13) as contributing to the setting of Arundel. Views of road users along Bakers Arms Hill and Maltravers Street.
40	High Street and Monarch’s Way (along boundary of SDNP)	Road users, residential and Recreational	Views south from “The northern end of the High Street” are noted in <i>Arun Local Plan Policy LAN DM2</i> (Ref 7-13) as contributing to the setting of Arundel. Views of road users along High Street

Viewpoint number	Location	Receptor type	Reason for inclusion
			and users of the Monarch's Way promoted route.
41	Arundel Castle Grounds (within SDNP and Arundel Castle Registered Parks and Garden)	Recreational	Viewpoint from heritage receptor at request from West Sussex County Council.
42	Arundel Castle (within SDNP and Arundel Castle Registered Parks and Garden)	Views from the Castle	Specific viewpoint from Arundel Castle overlooking the Arun Valley from 'Viewpoint 50' in the <i>South Downs National Park View Characterisation and Analysis, 2015</i> (Ref 7-50).
43	Railway on northern approach to Arundel	Rail passengers	Representative of people travelling by train approaching Arundel.
44	Church Lane, Lyminster	Road users and residential	Representative of residents of Lyminster as requested by the South Downs National Park Authority (SDNPA). Views of road users along Church Lane.
45	Footpath 3063 west of Arundel (within SDNP)	Recreational	Representative of views east of Arundel from within the SDNP.
46	Footpath 3064 and Monarch's Way (within SDNP)	Recreational	View south across the setting of Arundel.

Viewpoint number	Location	Receptor type	Reason for inclusion
47	Footpath 2207, west of Upper Broomhurst Farm	Recreational	Representative of views south of Arundel.
48	Footpath 2207, Broomhurst Farm	Residential and Recreational	Representative of users of the footpath, as requested by the SDNPA, and residents at Broomhurst Farm.
49	Convent of Poor Clares, Crossbush Lane (along boundary of SDNP)	Views from the convent, Residential and road users	Representative of views from Crossbush, as requested by the SDNPA. Views of road users along Crossbush Lane.
50	Broomhurst Cottages, Footpath 2205	Residential and recreational	Representative of residents of Broomhurst Cottages and users of Footpath 2205.
51	Bridleway 2221, Warningcamp Hill (within SDNP)	Recreational	Long distance view as requested by the SDNPA. Within the SDNP.
52	Peppering High Barn and Bridleway 2241 (within SDNP)	Residential and recreational	Long distance view from Bridleway 2241 along Peppering Lane.
53	Norfolk Clump and Footpath 2256_1 (within SDNP)	Recreational	Long distance view from Footpath 2256_1.
54	Amberley Mount, South Downs Way (within SDNP)	Recreational	Specific viewpoint at Amberley Mount on the South Downs Way National Trail. 'Viewpoint 32' in the <i>South Downs</i>

Viewpoint number	Location	Receptor type	Reason for inclusion
			<i>National Park View Characterisation and Analysis, 2015 (Ref 7-50).</i>
55	Springhead Hill (within SDNP)	Recreational	Long distance view from Springhead Hill on the South Downs Way National Trail.
56	Back Arun Fishery	Recreational	Representative of anglers.

### Visualisations

101. The reasoning for visualisation inclusions in the DCO application are given in table 7-A-2 below.

**Table 7-A-2: Initial list of representative photomontage locations**

Viewpoint number	Reason for inclusion
8	Short-distance view looking north from the local PRow and road network on the settlement edge of Walberton towards where the Scheme crosses through Avisford Park Golf Club. Also noting the residential development under construction immediately to the north.
13	Short-distance view looking south-west from the local PRow network adjacent to St Mary's Church, Binsted, recently listed as Grade II* by Historic England.
17	Medium-distance view looking south from the local PRow network within the SDNP on a slightly elevated position to the new dual carriageway.
20	Medium to long-distance view within the SDNP looking south from the local PRow network at a relatively elevated position to the new dual carriageway.
28	Short-distance view looking north-east from the local road network near to Manor Farm, Tortington.
29	Medium-distance view looking south from the local road network near to residential properties on the south-western edge of Arundel at a relatively elevated position to the new dual carriageway.
33	Medium to long-distance view looking south-west from Monarch's Way promoted route within the SDNP at a

Viewpoint number	Reason for inclusion
	relatively elevated position to the new dual carriageway, north of Arundel.
34	Medium to long-distance view looking south-west from the local road network, along Monarch's Way promoted route and in the vicinity of the Roman Catholic cemetery. The view is along the boundary of the SDNP and is at a relatively elevated position to the new dual carriageway, within Arundel.
42	Medium to long-distance view looking south from Arundel Castle (Grade I) within the SDNP.
43	Medium-distance view looking north-west from the railway line through the Arun floodplain on the approach to Arundel.
46	Medium-distance view looking south from Monarch's Way promoted route within the SDNP through the Arun floodplain.
49	Short-distance view looking south-west from Crossbush along the boundary of the SDNP.
51	Long-distance view looking south-west from the local PRow network from near to Warningcamp Hill within the SDNP. View looking towards Arundel with the River Arun floodplain in the distance from an elevated position.
54	Long-distance view looking south-west from the South Downs Way National Trail at Amberley Mount within the SDNP. View looking towards Arundel with the River Arun floodplain in the distance from an elevated position.
55	Long-distance view looking south-west from the South Downs Way National Trail within the SDNP. Identified as a stargazing location within the SDNP IDSR by local astronomers. Included to assess the dark sky landscape.

### Lighting and night-time visibility

102. The *England's Light Pollution and Dark Skies mapping* published by CPRE (Ref 7-51) dark sky mapping indicates the varying levels of light pollution within the study area, with more intensive areas of lighting around Arundel and Crossbush, and at Fontwell. These areas are typically between the centre of the spectrum (yellow) and the two next brighter colour bands (orange and pink). This contrasts with darker areas between Binsted and Tortington, and across the SDNP to the north, which are generally within the darkest end of the spectrum (dark blue).
103. Along the existing A27, the road is lit between Fontwell and Copse Lane, and between Ford Road roundabout and Crossbush roundabout (including the approaches to these junctions).

104. Arundel and Crossbush are lit, with streetlights extending south from Arundel along Ford Road through to the settlement edge.
105. The villages of Tortington and Binsted, and the River Arun floodplain are generally unlit, resulting in an essentially dark sky landscape but with some impact of sky glow from the developed coastal plain to the south of the study area.
106. Walberton is intermittently street lit, with Yapton Lane lit for a short section along the western edge of the village on the approaches to the roundabout with The Street.
107. In the wider study area, the SDNP is a notably dark landscape, as recognised by its designation as an IDSR and baseline conditions reported at *paragraph 7.5.48 with reference to the SDNP Authority TAN* (Ref 7-40). Views south towards the draft Order Limits from elevated positions in the SDNP take in the extensively lit areas along the coast, but the landscape within the SDNP and extending south alongside the River Arun is essentially dark.
108. With reference to the Institute of Lighting Professionals 'Guidance notes for the reduction of obtrusive light' (Appendix Ref 7-A-4), much of the draft Order Limits is considered to be between Zone E2 Rural, and Zone E1 Natural, but with areas of reduced sensitivity around Arundel and Crossbush, and around Fontwell.

## Appendix 8-A Habitat Regulations Assessment (HRA), Screening

### Introduction

1. Under the requirements of the Conservation of Habitats and Species Regulations 2017 (as amended) ('The Habitats Regulations') it is necessary for the relevant decision maker, in this case, the Secretary of State, to consider whether the A27 Arundel Bypass (the Scheme) may have likely significant effects upon the National Site Network, comprising designated Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), or candidate SACs or potential SPAs if relevant. As a matter of government policy, National Policy Statement for National Networks (NPSNN) and the National Planning Policy Framework (NPPF) also protect Designated Wetlands of International Importance (known as Ramsar sites). Box 1 provides the legislative basis for a Habitats Regulation Assessment (HRA).

#### Box 1: The legislative basis for Appropriate Assessment

##### Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

*"A competent authority, before deciding to ... give any consent for a plan or project which is likely to have a significant effect on a European site ... shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives... The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site".*

2. The process of Habitats Regulation Assessment undertaken pursuant to the Habitats Regulations first involves identifying whether there is the potential for likely significant effects at an initial screening process (Stage 1). Should the potential for likely significant effects be established it is necessary to proceed to further consider the effects by way of an 'Appropriate Assessment' (Stage 2). Overall, this process of assessment is known as HRA.
3. This report has been prepared in relation to preliminary design and updates the preliminary HRA produced at PCF Stage 2. This report to inform HRA has been prepared with reference to the Planning Inspectorate Advice Note 10 (Habitats Regulations Assessment)<sup>1</sup> on the basis that the Scheme will be subject to a Development Consent Order (DCO). The format of the HRA is provided within the Design Manual for Roads and Bridges (DMRB) Assessment of Implications on internationally important wildlife sites

<sup>1</sup> <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/>

template as set out in DMRB LA 115 v.1 (Habitats Regulations Assessment). Matrices required by The Planning Inspectorate Advice Note 10 are included. Guidance used in this report is summarised below.

**Table 8-A-1: Legislation, Policy and Guidance Used in this Report**

Document	Relevance
Conservation of Habitats and Species Regulations 2017 (as amended)	Provides the legislative basis for HRA
National Planning Policy Framework (July 2021) <sup>2</sup>	Summarises the legislative basis for HRA and in particular clarifies (in paragraph 181) that the HRA process also applies to Ramsar sites
Design Manual for Roads and Bridges Volume LA115: Habitats Regulations Assessment (version 1) <sup>3</sup>	Sets out the HRA process in England and Wales that is specific to schemes for which National Highways is a competent authority and/or applicant
Design Manual for Roads and Bridges Volume LA105: Air Quality (version 1) <sup>4</sup>	Paragraph 2.25 requires that assessment of air quality impacts is required on designated sites within 200m of the Affected Road Network
National Policy Statement for National Networks <sup>5</sup>	<p>Paragraphs 4.22 to 4.25 state:</p> <p><i>'4.22 Prior to granting a Development Consent Order, the Secretary of State must, under the Habitats Regulations, consider whether it is possible that the project could have a significant effect on the objectives of a European site, or on any site to which the same protection is applied as a matter of policy, either alone or in combination with other plans or projects. Applicants should also refer to paragraphs 5.20 to 5.38 of this national policy statement on biodiversity and geological conservation and to paragraphs 5.3 to 5.15 on air quality. The applicant should seek the advice of Natural England and, where appropriate, for cross-boundary impacts, Natural Resources Wales and Scottish Natural</i></p>

<sup>2</sup> <https://www.gov.uk/guidance/national-planning-policy-framework>

<sup>3</sup> <https://www.standardsforhighways.co.uk/dmrbr/search/e2fdab58-d293-4af7-b737-b55e08e045ae>

<sup>4</sup> <https://www.standardsforhighways.co.uk/dmrbr/search/10191621-07df-44a3-892e-c1d5c7a28d90>

<sup>5</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/387222/npsn-print.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387222/npsn-print.pdf)

Document	Relevance
	<p><i>Heritage to ensure that impacts on European sites in Wales and Scotland are adequately considered.</i></p> <p><i>4.23 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. This information should include details of any measures that are proposed to minimise or avoid any likely significant effects on a European site. The information provided may also assist the Secretary of State in concluding that an appropriate assessment is not required because significant effects on European sites are sufficiently unlikely that they can be excluded.</i></p> <p><i>4.24 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. These tests are that no feasible, less-damaging alternatives should exist, that there are imperative reasons of overriding public interest for the proposal going ahead, and that adequate and timely compensation measures will be put in place to ensure the overall coherence of the network of protected sites is maintained.</i></p> <p><i>4.25 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 grounds relating to human health, public safety or beneficial consequences of primary importance to the environment’.</i></p>
Habitats Regulations Assessments: Protecting a European site (2021) <sup>6</sup>	Provides broad UK government guidance on the HRA process.
Planning Inspectorate Advice Note 10: Habitats	Provides broad Planning Inspectorate guidance on the HRA process including terminology for reports

<sup>6</sup> <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site>  
HE551523-BAM-EGN-ZZ-RP-LE-0028  
06/01/22

Document	Relevance
Regulations Assessment (2017)	and the templates for impact matrices to be provided with HRA reports
Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol (2017) 7	South Downs National Park Authority document (produced with Natural England input) that sets out the approach to determining planning applications within 12km of the three Sussex bat SACs (Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC)
Adopted South Downs Local Plan8	<p>Policy SD10 relates to the Sussex Bat Protocol and states:</p> <p><i>‘The Mens SAC, Ebernoe Common SAC and Singleton &amp; Cocking Tunnels SAC</i></p> <p><i>1. Development proposals on greenfield sites and sites that support or are in close proximity to suitable commuting and foraging habitat (including mature vegetative linear features such as woodlands, hedgerows riverine and wetland habitats) within the following ranges as shown on the Policies Map, should have due regard to the possibility that Barbastelle and Bechstein’s Bats will be utilising the site. Such proposals will be required to incorporate necessary surveys and ensure that key features (foraging habitat and commuting routes) are retained, in addition to a suitable buffer to safeguard against disturbance:</i></p> <p><i>a) 6.5km: Key conservation area – all impacts to bats must be considered given that habitats within this zone are considered critical for sustaining the populations of bats within the SACs; and</i></p> <p><i>b) 12km: Wider conservation area – significant impacts or severance to flightlines to be considered.</i></p> <p><i>2. Proposed use or development of the tunnels comprising the Singleton &amp; Cocking Tunnels SAC will be required to demonstrate that there is no adverse effect on the interest features, including hibernation</i></p>

7 <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

8 [https://www.southdowns.gov.uk/wp-content/uploads/2019/07/SD\\_LocalPlan\\_2019\\_17Wb.pdf](https://www.southdowns.gov.uk/wp-content/uploads/2019/07/SD_LocalPlan_2019_17Wb.pdf)

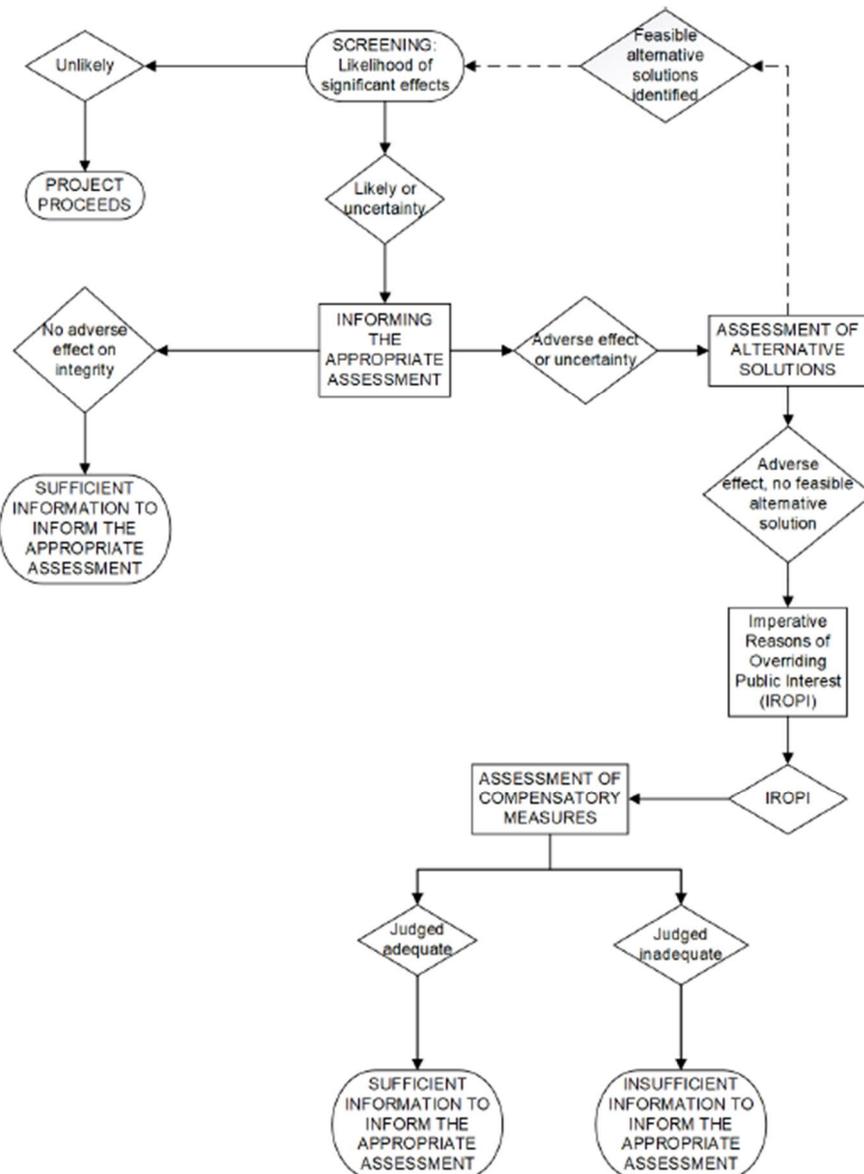
Document	Relevance
	<p><i>habitat for Barbastelle and Bechstein's Bats, or on the integrity of the site.</i></p> <p><i>Arun Valley SPA</i></p> <p><i>3. Development proposals on greenfield sites within 5km of the Arun Valley SPA, as shown on the Policies Map, will undertake an appraisal as to whether the land is suitable for wintering Bewick Swan. If it is suitable then surveys will be undertaken to determine whether the fields are of importance to the swan population. If so, appropriate alternative habitat would be required before development could proceed'.</i></p>

4. This document provides information to enable the competent authority to undertake the HRA screening of the Scheme, covering the following three elements in accordance with best practice guidelines and relevant legislation:
  - a. Determining whether the Scheme is directly connected with or necessary to the management of applicable sites (SAC, SPA, Ramsar).
  - b. Undertaking an initial investigation to identify the potential for likely significant (direct and indirect) effects arising from the Scheme on the seven internationally important wildlife sites.
  - c. Identifying the potential for in-combination effects on the seven internationally important wildlife sites arising between the Scheme and other plans and projects to occur.
  
5. With regard to the first test (a) above, the Scheme is not directly connected with or necessary to the management of applicable sites. According to DMRB Volume LA 115: *'The screening stage of HRA shall be completed for all internationally important wildlife sites where a route corridor or project meets any of the following screening criteria':*
  - a. is within 2 km of an internationally important wildlife site or functionally linked land;
  - b. is within 30 km of SACs where bats are noted as one of the qualifying interests;
  - c. crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as an internationally important wildlife site;

- d. has a potential hydrological or hydrogeological linkage to a internationally important wildlife site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers the assessment of internationally important wildlife sites; or
    - e. has an affected road network (ARN) which triggers the criteria for assessment of internationally important wildlife sites’.
6. An area extending to 2 km from the outer boundary of the Scheme footprint was selected in which internationally important wildlife sites (SAC, SPA, Ramsar) were identified. This was extended to a 30 km area for internationally important wildlife sites which are designated for bats, because some bat species may forage up to this distance from such sites. Internationally important wildlife sites upstream (in relation to tidal flow) or downstream of the point at which the Scheme crosses the River Arun, where there is a pathway by which hydrological impact might occur, were also included (Arun Valley SAC, SPA and Ramsar site and Solent & Dorset Coast SPA). These areas are hereafter referred to as ‘the Study Area’ and all designated sites discussed are shown in Figure 8-A-1.
7. Based on the process described above, seven internationally important wildlife sites are identified to be subject to a Test of Likely Significant Effects in this HRA:
  - a. Arun Valley Ramsar site
  - b. Arun Valley SAC
  - c. Arun Valley SPA
  - d. Ebernoe Common SAC
  - e. Singleton and Cocking Tunnels SAC
  - f. The Mens SAC
  - g. Solent and Dorset Coast SPA
8. With specific regard to air quality impacts, Affected Roads (as defined in DMRB LA 105 (Air Quality) v.1) are relevant to HRA only if they pass within 200 m of an internationally important wildlife site, this being the distance beyond which the local elevation of pollution due to roads has dropped to background levels. The Affected Road Network (ARN) for the Scheme does not include any roads within 200 m of any internationally important wildlife sites.
9. The Planning Inspectorate Advice Note 10 requires an evaluation of the potential for the Scheme to require other consents which could also require HRA by different competent authorities, and a statement as to whether the Scheme boundary overlaps with devolved administrations or other European Economic Area (EEA) States. It is confirmed that the Scheme boundary does not overlap with areas of devolved administrations or with those of EEA States.

## Methodology

10. Plate 8-A-1, taken from DMRB LA 115 outlines the various stages of HRA. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no adverse effects on integrity remain or (where appropriate and subject to the No Alternatives and IROPI tests) compensatory measures are agreed.



### Plate 8-A-1: Approach to Habitat Regulations Assessment

#### Likely Significant Effects

11. Following evidence gathering, the first stage of the HRA process comprises a Likely Significant Effect (LSE) test, which is a high-level risk assessment

- to decide whether a stage 2 assessment known as Appropriate Assessment is required. If the LSE test concludes that significant effects are unlikely, no further assessment is required.
12. Recent case law<sup>9</sup> has determined that measures to reduce the otherwise harmful effects of a project (i.e., mitigation) on an internationally important wildlife site cannot be taken into account in the stage 1 determination of likely significant effects.
  13. In this case the Test of Likely Significant Effects has drawn on a range of data sources. These include non-breeding bird surveys undertaken for the DCO in 2017 and 2018, and again in 2020 and 2021, to identify the presence of functionally-linked land for Arun Valley SPA and Ramsar site in the vicinity of the scheme and extensive bat surveys undertaken for the scheme since 2017, including radio-tracking. These surveys are reported more fully in the biodiversity section of the PEIR.
  14. The Supplementary Advice on the Conservation Objectives and Site Improvement Plans for European sites have also been discussed, as has (for the Sussex Bat SACs) the Sussex Bat Protocol and its underlying radio-tracking data. Other technical studies have also been utilised such as hydrological consideration of the potential impacts of the scheme on the saline wedge in the Arun Valley. The HRA has also drawn upon a consultation response received from Natural England in April 2019 in response to a Discretionary Advice Service Request to Inform the PCF2 HRA. In that letter Natural England identified the European sites for which they considered a conclusion of no likely significant effect could be drawn at that time based on the data available.

### **Assessment 'In Combination'**

15. It is a requirement of the Habitats Regulations that the likely significant effects of any development are not considered in isolation, but in combination with other plans and projects that may also affect the internationally important wildlife site(s) in question.
16. The Planning Inspectorate Advice Note 10 states that in assessing in-combination effects the following projects should be considered:
  - a. Projects that are under construction.
  - b. Permitted application(s) not yet implemented.
  - c. Submitted application(s) not yet determined.
  - d. All refusals subject to appeal procedures not yet determined.
  - e. Projects on the National Infrastructure's programme of projects.
  - f. Projects identified in emerging development plans (e.g. Arun Local Plan and South Downs National Park Local Plan) recognising that much

information on relevant proposals will be limited and the degree of uncertainty which may be present.

17. In order to inform the assessment process, surrounding plans and projects have been consulted to determine the other plans and projects that could have an in-combination LSE with the Scheme.
18. The following plans and projects were selected because they were the main land use plans and projects that are located within, or surrounding the Scheme. Reference has also been made to non-housing or conventional employment development (which is not set by Local Plans) referenced within the cumulative effects section of the PEIR.
19. Local authorities are required to strategically plan the amounts of housing and employment growth they expect to see in their areas over a c. 20-year period, including the locations for development except windfall (the location of which cannot, by definition, be predicted). As such, they provide the best and most efficient way of taking into account all the housing and employment growth that are likely to be occurring over the same timescale as the delivery and operation of the Scheme. This is more efficient than scrutinising individual planning applications for housing and employment and provides greater coverage of potential for in combination effects as these plans cover all housing and employment expected in the zone of influence of the Scheme until at least 2030 and in some cases beyond.
20. Southern Water's Water Resource Management Plan (WRMP) and Drought Plan have been included because it is known that Natural England have concerns about the hydrological impact of the Hardham boreholes (a key part of the WRMP and Drought Plan) on the hydrology of Arun Valley SAC, SPA and Ramsar site.
21. The selected plans and projects for assessment within this Stage 1 Assessment are below. The last four were added in response to a scoping response from Natural England in April 2019 in response to a DAS request at PCF Stage 2:
  - a. South Downs Local Plan
  - b. Arun Local Plan
  - c. Arundel Neighbourhood Plan
  - d. Lyminster and Crossbush Neighbourhood Plan
  - e. Walberton Neighbourhood Plan
  - f. Southern Water's Water Resource Management Plan and Drought Plan
  - g. West Sussex Transport Plan
  - h. The A27 Worthing and Lancing Road scheme
  - i. The onshore cable corridor for the Rampion 2 offshore windfarm scheme (Offshore Wind Farm with a generating capacity of up to 1200MW together with associated electrical infrastructure)

- j. The proposed water pipeline from Ford to Rother
- k. The Lower Tidal Arun Flood Risk Management Scheme
- l. The Arun Valley Vision

**Determination of Likely Significant Effects**

22. DMRB LA 115 sets out a template for Likely Significant Effect Matrices. This has been used as the template for this section of the report. Each designated site that has been scoped into the HRA process using the DMRB criteria cited in the ‘Introduction’ of this Appendix is discussed below, and has a matrix dedicated to it.

**Table 8-A-2: Likely significant effects on The Mens SAC**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	The Mens SAC (UK0012716)
<b>Description of Project</b> Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:	
<b>Size and scale (road type and probable traffic volume)</b>	0) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.
<b>Land-take</b>	1) There will be no loss of the SAC associated with the proposed works.
<b>Distance from the internationally important wildlife site or key features of the site (from edge of the project assessment corridor)</b>	2) The Scheme lies approximately 14.5 km south of the Mens SAC at its closest point.

Resource requirements (from the internationally important wildlife site or from areas in proximity to the site, where of relevance to consideration of impacts)	3) None required
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	4) No part of the Affected Road Network for the scheme lies within 200 m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 14.5 km distance separating the Scheme from the SAC.
Excavation requirements (e.g. impacts of local hydrogeology)	5) None
Transportation requirements	6) None
Duration of construction, operation, etc.	7) Construction is currently planned to start in 2024 such that the Scheme will open to traffic in 2027. Operation will be permanent following completion of construction.
Other	8) N/A
<p>Characteristics of internationally important wildlife site(s)  A brief description of the internationally important wildlife site should be produced, including information on:</p>	
Name of internationally important wildlife site and its EU code	9) The Mens SAC (UK0012716)
Location and distance of the internationally important wildlife site from the proposed works	10) Approximately 14.5 km north of the Scheme draft order limits

<p>Internationally important wildlife site size</p>	<p>11) Approximately 204.69 ha</p>
<p>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</p>	<p>12) Site is designated for the following:</p> <ul style="list-style-type: none"> <li>f. Beech forest</li> <li>g. Barbastelle bat</li> </ul>
<p>Vulnerability of the internationally important wildlife site – any information available from the standard data forms on potential effect pathways</p>	<p>13) The following threats and pressures are taken from the Natural England Site Improvement Plan<sup>10</sup> for The Mens SAC accompanied by cross-reference to Supplementary Advice on the Conservation Objectives<sup>11</sup>:</p> <ul style="list-style-type: none"> <li>a. Forestry &amp; woodland management;</li> <li>b. Habitat connectivity (The protected site is limited to a woodland core area where breeding colonies of bats are known to exist. The bats, however, rely on commuting and foraging habitat outside of the site);</li> <li>c. Invasive species (specifically, <i>Rhododendron</i>);</li> <li>d. Changes in land management in the surrounding countryside;</li> <li>e. Air pollution; and</li> <li>f. Public access/ disturbance.</li> </ul>
<p>Internationally important wildlife site conservation objectives – where these are readily available</p>	<p>14) The Conservation Objectives for The Mens SAC state:</p> <p>15) Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>a. The extent and distribution of qualifying natural habitats and habitats of qualifying species;</li> <li>b. The structure and function (including typical species) of qualifying natural habitats;</li> <li>c. The structure and function of the habitats of qualifying species;</li> </ul>

<sup>10</sup> Site Improvement Plan: The Mens - SIP242 ([naturalengland.org.uk](http://naturalengland.org.uk))

<sup>11</sup> [European Site Conservation Objectives for The Mens SAC - UK0012716 \(naturalengland.org.uk\)](http://naturalengland.org.uk)

	<p>d. The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;</p> <p>e. The populations of qualifying species; and</p> <p>f. The distribution of qualifying species within the site.</p>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p><b>16)</b> The only potential impact pathway that could exist is loss of functionally-linked habitat or disruption of commuting routes and that is therefore investigated here. As a result of radio-tracking work regarding barbastelle use of the land around the SAC the ‘Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol’ (2017)<sup>12</sup> has been created by Natural England and South Downs National Park Authority. This identifies suitable habitat up to 12 km from The Mens SAC as <i>‘the wider conservation area which is the full extent of the range of foraging areas required by the bats’</i>. It is based on radio-tracking undertaken for the maternity colonies at The Mens SAC and Ebernoe Common SAC, which indicated the furthest a foraging barbastelle travelled was 12 km and 75% remained within 7-9 km of the SACs.</p> <p><b>17)</b> As a result, Policy SD10 of the South Downs Local Plan requires investigation of potential impacts on the SAC from development within 12 km of the SAC. The Scheme is located approximately 14.5 km from the SAC and thus lies well outside the wider conservation area.</p>	
<p><b>Initial Assessment in relation to The Mens SAC</b>  The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts.  Describe any likely changes to the site arising as a result of:</p>	
<p>Reduction of habitat area</p>	<p>18) None. The SAC is approximately 14.5 km from the Scheme draft order limits.</p>
<p>Disturbance to key species</p>	<p>19) None. The Scheme lies well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.</p>
<p>Habitat or species fragmentation</p>	<p>20) None. The Scheme lies well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.</p>

<sup>12</sup> <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

Reduction in species density	21) None. The Scheme lies approximately 14.5 km from the SAC itself and well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.
Changes in key indicators of conservation value (water quality etc.)	22) None. The Scheme lies approximately 14.5 km from the SAC itself and well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol. The SAC is not dependent on particular hydrological conditions other than well-drained soils.
Climate change	23) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the Scheme to affect European sites through this impact pathway.
Describe any likely impacts on the internationally important wildlife site as a whole in terms of:	
Interference with the key relationships that define the structure of the site	24) None. The scheme lies approximately 14.5 km from the SAC and thus well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol and planning policy.
Interference with key relationships that define the function of the site	25) None. The Scheme lies approximately 15.8 km from the SAC itself and well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	26) No Likely Significant Effect
Disturbance to key species	27) No Likely Significant Effect
Habitat or species fragmentation	28) No Likely Significant Effect
Disruption	29) No Likely Significant Effect
Disturbance	30) No Likely Significant Effect
Change to key elements of the site (e.g. water quality,	31) No Likely Significant Effect

hydrological regime etc.)	
Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:	
<b>32) None</b>	
Outcome of screening stage	<p>33) No Likely Significant Effect, either alone or in combination with the other plans and projects described in the ‘Likely Significant Effects section above.</p> <p>34) The only potential impact pathway is loss of functionally-linked habitat or related disruption of commuting routes for bats that roost at the SAC. As a result of radio-tracking work of barbastelle use of the land around the SAC the ‘Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol’ (2017)<sup>13</sup> has been created by Natural England and South Downs National Park Authority. This identifies suitable habitat up to 12 km from The Mens SAC as ‘<i>the wider conservation area which is the full extent of the range of foraging areas required by the bats</i>’. It is based on radio-tracking undertaken for the maternity colonies at The Mens SAC and Ebernoe Common SAC, which indicated the furthest a foraging barbastelle travelled was 12 km and 75% remained within 7-9 km of the SACs and that zone is reflected in local planning policy (e.g. the South Downs Local Plan Policy SD10). Since the Scheme is located approximately 15.8 km from the SAC it lies well outside the wider conservation area. As such, no likely significant effect will arise on the SAC either alone or in combination with other plans and projects.</p>
Are the appropriate statutory environmental bodies in agreement with this conclusion?	<p>35) At the time of writing, Natural England had not yet been consulted on this report. In a scoping response received in April 2019 Natural England confirmed that they considered LSE on this SAC could be dismissed due to distance.</p>

<sup>13</sup> <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

**Table 8-A-3: Likely Significant Effects on Ebernoe Common SAC**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	Ebernoe Common SAC (UK0012715)
<b>Description of Project</b> Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:	
<b>Size and scale (road type and probable traffic volume)</b>	36) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.
<b>Land-take</b>	37) There will be no loss of the SAC associated with the proposed works.
<b>Distance from the internationally important wildlife site or key features of the site (from edge of the project assessment corridor)</b>	38) The Scheme lies approximately 18 km south of Ebernoe Common SAC at its closest point.
<b>Resource requirements (from the internationally important wildlife site or from areas in proximity to the site, where of relevance to consideration of impacts)</b>	39) None required

<b>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</b>	40) No part of the Affected Road Network for the scheme lies within 200m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 18 km distance separating the Scheme from the SAC.
<b>Excavation requirements (e.g. impacts of local hydrogeology)</b>	41) None
<b>Transportation requirements</b>	42) None
<b>Duration of construction, operation, etc.</b>	43) Construction is currently planned to start in 2024 such that the Scheme will open to traffic in 2027. Operation will be effectively permanent.
<b>Other</b>	44) N/A
<b>Characteristics of internationally important wildlife site(s)</b> <b>A brief description of the internationally important wildlife site should be produced, including information on:</b>	
<b>Name of internationally important wildlife site and its EU code</b>	45) Ebernoe Common SAC (UK0012715)
<b>Location and distance of the internationally important wildlife site from the proposed works</b>	46) Approximately 18 km north of the Scheme
<b>internationally important wildlife site size</b>	47) Approximately 234.93 ha
<b>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</b>	48) Site is designated for the following: a. Beech forest b. Bechstein bat c. Barbastelle bat
<b>Vulnerability of the internationally important wildlife site – any information available from</b>	49) The following threats and pressures are taken from the Natural England Site Improvement Plan for Ebernoe Common

<p><b>the standard data forms on potential effect pathways</b></p>	<p>SAC<sup>14</sup> supplemented by reference to the Supplementary Advice on the Conservation Objectives<sup>15</sup>:</p> <ul style="list-style-type: none"> <li>a. Forestry &amp; woodland management;</li> <li>b. Offsite habitat availability and management;</li> <li>c. Habitat fragmentation (The protected site is limited to a woodland core area where breeding colonies are known to exist. The bats, however, rely on commuting and foraging habitat outside of the site);</li> <li>d. Changes in land management;</li> <li>e. Hydrological changes (Recent research has shown that water availability (ponds and streams) within Bechstein's breeding sites is likely to be important. Housing development around the site and hydrological changes in the local area could impact on the availability of these habitats);</li> <li>f. Air pollution; and</li> <li>g. Public access/disturbance.</li> </ul>
<p><b>Internationally important wildlife site conservation objectives – where these are readily available</b></p>	<p>50) The Conservation Objectives for Ebernoe Common SAC state: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>a. The extent and distribution of qualifying natural habitats and habitats of qualifying species;</li> <li>b. The structure and function (including typical species) of qualifying natural habitats;</li> <li>c. The structure and function of the habitats of qualifying species;</li> <li>d. The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;</li> </ul>

<sup>14</sup> [Site Improvement Plan: Ebernoe Common - SIP072 \(naturalengland.org.uk\)](https://naturalengland.org.uk)

<sup>15</sup> [European Site Conservation Objectives for Ebernoe Common SAC - UK0012715 \(naturalengland.org.uk\)](https://naturalengland.org.uk)

	<p>e. The populations of qualifying species; and  f. The distribution of qualifying species within the site.</p>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p>51) The only potential impact pathway that could exist is loss of functionally-linked habitat or associated disruption of commuting routes and that is therefore investigated here. As a result of radio-tracking work of barbastelle use of the land around the SAC the ‘Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol’ (2017)<sup>16</sup> has been created by Natural England and South Downs National Park Authority. This identifies suitable habitat up to 12 km from Ebernoe Common SAC as ‘the wider conservation area which is the full extent of the range of foraging areas required by the bats’. As a result, Policy SD10 of the South Downs Local Plan requires investigation of potential impacts on the SAC from development within 12 km of the SAC. Since the Scheme is located approximately 18 km from the SAC it lies well outside the wider conservation area.</p>	
<p><b>Initial Assessment in relation to Ebernoe Common SAC</b>  The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts.  Describe any likely changes to the site arising as a result of:</p>	
<p><b>Reduction of habitat area</b></p>	<p>52) None. The SAC is approximately 18 km from the Scheme draft order limits and therefore no impact pathway exists linking the scheme to the beech woodland habitat for which the SAC is designated in part.</p>
<p><b>Disturbance to key species</b></p>	<p>53) None. The Scheme lies well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.</p>
<p><b>Habitat or species fragmentation</b></p>	<p>54) None. The Scheme lies well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.</p>
<p><b>Reduction in species density</b></p>	<p>55) None. The Scheme lies approximately 18 km from the SAC itself and well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.</p>
<p><b>Changes in key indicators of conservation</b></p>	<p>56) None. The Scheme lies approximately 18 km from the SAC itself and well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.</p>

<sup>16</sup> <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

<b>value (water quality etc.)</b>	While the SAC is sensitive to hydrological changes it is too distant from the scheme, and lacks hydrological connection to the scheme, to be affected.
<b>Climate change</b>	57) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the scheme to affect European sites through this impact pathway.
<b>Describe any likely impacts on the internationally important wildlife site as a whole in terms of:</b>	
<b>Interference with the key relationships that define the structure of the site</b>	58) None. The Scheme lies approximately 18 km from the SAC and thus well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol and planning policy.
<b>Interference with key relationships that define the function of the site</b>	59) None. The Scheme lies approximately 18 km from the SAC itself and well beyond the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.
<b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b>	
<b>Reduction of habitat area</b>	60) No Likely Significant Effect
<b>Disturbance to key species</b>	61) No Likely Significant Effect
<b>Habitat or species fragmentation</b>	62) No Likely Significant Effect
<b>Disruption</b>	63) No Likely Significant Effect
<b>Disturbance</b>	64) No Likely Significant Effect
<b>Change to key elements of the site (e.g. water quality, hydrological regime etc.)</b>	65) No Likely Significant Effect
<b>Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:</b>	

66) None	
<b>Outcome of screening stage</b>	<p>67) No Likely Significant Effect, either alone or in combination with the other plans and projects described in the ‘Likely Significant Effects section above.</p> <p>68) The only potential impact pathway is loss of functionally-linked habitat or disruption of commuting routes. As a result of radio-tracking work of barbastelle use of the land around the SAC the ‘Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol’ (2017)<sup>17</sup> has been created by Natural England and South Downs National Park Authority. This identifies suitable habitat up to 12 km from Ebernoe Common SAC as ‘<i>the wider conservation area which is the full extent of the range of foraging areas required by the bats</i>’ and that zone is reflected in local planning policy (e.g. the South Downs Local Plan Policy SD10). Since the Scheme is located approximately 18 km from the SAC it lies well outside the wider conservation area. As such, no likely significant effect will arise on the SAC either alone or in combination with other plans and projects.</p>
<b>Are the appropriate statutory environmental bodies in agreement with this conclusion?</b>	69) At the time of writing, Natural England had not yet been consulted on this report. In a scoping response received in April 2019 Natural England confirmed that they considered LSE on this SAC could be dismissed due to distance.

**Table 8-A-4 Likely Significant Effects on Singleton & Cocking Tunnels SAC**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	Singleton & Cocking Tunnels SAC (UK0030337)
<p><b>Description of Project</b></p> <p><i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:</i></p>	

<sup>17</sup> <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

<p><b>Size and scale (road type and probable traffic volume)</b></p>	<p>70) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.</p>
<p><b>Land-take</b></p>	<p>71) There will be no loss of the SAC associated with the proposed works.</p>
<p><b>Distance from the internationally important wildlife site or key features of the site (from edge of the project assessment corridor)</b></p>	<p>72) The Scheme draft order limits lie approximately 10.5 km south-east of Singleton &amp; Cocking Tunnels SAC at its closest point.</p>
<p><b>Resource requirements (from the internationally important wildlife site or from areas in proximity to the site, where of relevance to consideration of impacts)</b></p>	<p>73) None required</p>
<p><b>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</b></p>	<p>74) No part of the Affected Road Network for the scheme lies within 200m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 10.5 km distance separating the Scheme from the SAC.</p>
<p><b>Excavation requirements (e.g. impacts of)</b></p>	<p>75) None</p>

<b>local hydrogeology)</b>	
<b>Transportation requirements</b>	76) None
<b>Duration of construction, operation, etc.</b>	77) Construction is currently planned to start in 2024 such that the Scheme would open to traffic in 2027. Operation will be effectively permanent.
<b>Other</b>	78) N/A
<b>Characteristics of internationally important wildlife site(s)</b> <b>A brief description of the internationally important wildlife site should be produced, including information on:</b>	
<b>Name of internationally important wildlife site and its EU code</b>	79) Singleton & Cocking Tunnels SAC (UK0030337)
<b>Location and distance of the internationally important wildlife site from the proposed works</b>	80) Approximately 10.5 km north-west of the Scheme draft order limits
<b>Internationally important wildlife site size</b>	81) Approximately 1.88 ha
<b>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</b>	82) Site is designated for the following: a. Barbastelle bat b. Bechstein bat
<b>Vulnerability of the internationally important wildlife site – any information available from the standard data forms on potential effect pathways</b>	83) The following threats and pressures are taken from the Natural England Site Improvement Plan for Singleton & Cocking Tunnels SAC <sup>18</sup> , supplemented by the review of the Supplementary Advice on the Conservation Objectives <sup>19</sup> : a. Habitat connectivity (The protected site is limited to two tunnels in which bats hibernate. The bats, however, rely on commuting habitat outside of the site to reach the SAC);

<sup>18</sup> [Site Improvement Plan: Singleton and Cocking Tunnels - SIP218 \(naturalengland.org.uk\)](https://naturalengland.org.uk)

<sup>19</sup> [European Site Conservation Objectives for Singleton and Cocking Tunnels SAC - UK0030337 \(naturalengland.org.uk\)](https://naturalengland.org.uk)

	<ul style="list-style-type: none"> <li>b. Habitat fragmentation;</li> <li>c. Air pollution; and</li> <li>d. Public access/ disturbance.</li> </ul> <p>84) Page 6 of the Supplementary Advice on the Conservation Objectives for the SAC indicates that this SAC is deemed internationally important as a hibernation site for barbastelle and Bechstein bats. Similarly, page 3 of the Site Improvement Plan for the SAC states that <i>'The protected site is limited to the tunnels themselves and does not include the surrounding area which is used for commuting in and out of the tunnels, for foraging during periods of semi hibernation and for swarming in the autumn (directly outside the tunnel)'</i>.</p>
<p><b>Internationally important wildlife site conservation objectives – where these are readily available</b></p>	<p>85) The Conservation Objectives for Singleton &amp; Cocking Tunnels SAC state: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>a. The extent and distribution of the habitats of qualifying species;</li> <li>b. The structure and function of the habitats of qualifying species;</li> <li>c. The supporting processes on which the habitats of qualifying species rely;</li> <li>d. The populations of qualifying species; and</li> <li>e. The distribution of qualifying species within the site.</li> </ul>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p>86) The only potential impact pathway to the protected features (the tunnels) is potential loss of functionally-linked habitat or potential disruption of commuting routes to and from the hibernation site (or for foraging during winter). As a result of radio-tracking work of barbastelle use of the land around Ebernoe Common and The Mens SAC the 'Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol'</p>	

(2017)20 has been created by Natural England and South Downs National Park Authority. This identifies suitable habitat up to 12 km from The Mens SAC and Ebernoe Common SAC as ‘*the wider conservation area which is the full extent of the range of foraging areas required by the bats*’. The same 12 km distance was also applied to Singleton & Cocking Tunnels SAC in the Sussex Bat Protocol as the bats associated with SAC (particularly barbastelle) can actively forage in winter. As a result, Policy SD10 of the South Downs Local Plan requires investigation of potential impacts on the SAC from development within 12 km of the SAC.

- 87) There has been no formal research to determine the areas and/ or distances that the hibernating bat features of the Tunnels SAC disperse to outside of the hibernating season and barbastelle and Bechstein bats have both been recorded using the Scheme footprint and crossing the Scheme alignment (and the existing A27 indicating that the existing road does not pose a barrier to dispersal). However, since the Scheme lies within 12 km of the SAC, and bats from the other Sussex SACs have been recorded travelling this far, it is possible, and in line with the precautionary principle, to conclude that bats using the Scheme footprint could conceivably hibernate at the SAC.

**Initial Assessment in relation to Singleton & Cocking Tunnels SAC**  
**The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts.**  
**Describe any likely changes to the site arising as a result of:**

<b>Reduction of habitat area</b>	88) None. The SAC is approximately 10.5 km from the Scheme draft order limits
<b>Disturbance to key species</b>	89) None. The SAC is approximately 10.5 km from the Scheme draft order limits and therefore too distant for construction or operation of the Scheme to disturb hibernating bats at the SAC.
<b>Habitat or species fragmentation</b>	90) There is a possible effect on barbastelle travelling to and from the tunnels for hibernation (or to forage during winter) due to habitat fragmentation from hedgerow and woodland loss and the associated barrier effect of the bypass. The Scheme lies within the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol.
	91) Hibernation surveys by the Sussex Bat Group have confirmed the presence of both hibernating barbastelle and Bechstein bats at Singleton & Cocking Tunnels. These have only been recorded in low numbers. However, only two visits are carried out per annum (in January & February) and the counts include species observed visually and are therefore constrained by the height of the tunnels and the fact that species such as barbastelle and Bechstein

20 <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

	<p>may hibernate deep in the fissures and gaps in mortar, so may well be under-recorded.</p> <p>92) The SAC is not designated for swarming bats but swarming surveys have been undertaken outside the tunnel entrances over a number of years. These are not frequent, consisting of 2-3 visits per year (none for the last two years due to COVID-19) but Bechstein and Barbastelles have been recorded. Although the site is not designated for swarming, swarming is a likely function of mating pre-hibernation. While no bats ringed during swarming at the tunnels have ever been recorded in the vicinity of the Scheme (e.g. at Slindon) this is not conclusive due to lack of a systematic ringing programme.</p> <p>93) Surveys for the Scheme have found roosting &amp; foraging Bechstein bats north of the A27 at Ashbeds and have found a functional link between the Slindon maternity colony of barbastelle and the Scheme area.</p> <p>94) There is no actual evidence (e.g. from ringing of swarming bats at the tunnel entrances) that barbastelle bats using the Scheme area hibernate at Singleton &amp; Cocking Tunnels. However, at this stage we cannot rule out the connection between barbastelle bats, the Scheme footprint and the SAC. As such, it is not possible at this stage to conclude with no reasonable scientific doubt remaining that Barbastelle within the survey area do not use the SAC features.</p>
<b>Reduction in species density</b>	95) See commentary under ‘Habitat or species fragmentation’.
<b>Changes in key indicators of conservation value (water quality etc.)</b>	96) None. The Scheme draft order limits lies approximately 10.5 km from the SAC itself. The SAC is not dependent on particular hydrological conditions other than well-drained soils.
<b>Climate change</b>	97) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the scheme to affect European sites through this impact pathway.
<b><i>Describe any likely impacts on the internationally important wildlife site as a whole in terms of:</i></b>	
<b>Interference with the key relationships that define the</b>	98) None. The Scheme draft order limits lies approximately 10.5 km from the SAC.

<b>structure of the site</b>	
<b>Interference with key relationships that define the function of the site</b>	<p>99) The Scheme lies within the 12 km wider conservation area for the SAC identified in the Sussex Bat Protocol, although this zone is based on radio-tracking of bats at Ebernoe Common SAC and The Mens SAC and is intended to define the sustenance area for foraging bats rather than the zone beyond which no bats are expected to travel to hibernate in the tunnels.</p> <p>100) However, the radio-tracking evidence for barbastelle bats in West Sussex shows that they will travel 12 km from their roosts and relatively few hibernation sites for the species are known in Sussex. Barbastelle and Bechstein bats have been recorded using the Scheme area and while there is no specific evidence that bats from this area hibernate at the SAC the possibility remains.</p>
<b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b>	
<b>Reduction of habitat area</b>	101) No Likely Significant Effect
<b>Disturbance to key species</b>	102) No Likely Significant Effect
<b>Habitat or species fragmentation</b>	103) A Likely Significant Effect cannot be dismissed
<b>Disruption</b>	104) No Likely Significant Effect
<b>Disturbance</b>	105) No Likely Significant Effect
<b>Change to key elements of the site (e.g. water quality, hydrological regime etc.)</b>	106) No Likely Significant Effect
<b>Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:</b>	
<p>107) The only potential impact pathway is loss of functionally-linked habitat or disruption of commuting routes due to loss of commuting features and connectivity as a result of the Scheme and that is therefore discussed here. As a result of radio-tracking work of barbastelle use of the land around Ebernoe Common and The Mens SAC the 'Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol'</p>	

<p>(2017)21 has been created by Natural England and South Downs National Park Authority. This identifies suitable habitat up to 12 km from The Mens SAC and Ebernoe Common SAC as <i>‘the wider conservation area which is the full extent of the range of foraging areas required by the bats’</i>. The same 12 km distance is also applied to Singleton &amp; Cocking Tunnels SAC in the Sussex Bat Protocol as the bats associated with SAC (particularly barbastelle) can be actively foraging in winter and since West Sussex barbastelles are known to travel up to 12km to forage they could travel at least that far to hibernate. There has been no formal research to determine the areas and/ or distances that the hibernating bat features of the Tunnels SAC disperse to outside of the hibernating season. However, since the Scheme lies within 12 km of the SAC, and bats from the other Sussex SACs have been recorded travelling this far, it is possible bats using the Scheme footprint will hibernate at the SAC.</p>	
<p>108) There is no actual evidence (e.g. from ringing of swarming bats at the tunnel entrances) that barbastelle bats using the Scheme area hibernate at Singleton &amp; Cocking Tunnels. However, there is also no evidence they do not, and using the precautionary principle the bar for concluding a likely significant effect cannot be dismissed is low. In other words, the reasonable possibility of a link given the relative proximity of the Scheme to the SAC, rather than the knowledge that there is a definite link to the SAC, is all that is required to conclude a likely significant effect cannot be dismissed and that further assessment is necessary for the DCO.</p>	
<p><b>Outcome of screening stage</b></p>	<p>109) A Likely Significant Effect cannot be dismissed, either alone or due to the Scheme in combination with the A27 Worthing and Lancing Road scheme and the land cable corridor for the Rampion 2 offshore windfarm scheme, which may both also cause habitat severance and Appropriate Assessment is therefore required</p>
<p><b>Are the appropriate statutory environmental bodies in agreement with this conclusion?</b></p>	<p>110) At the time of writing, Natural England had not yet been consulted on this report. In a scoping response received in April 2019 Natural England considered that likely significant effects from the Scheme on this SAC could not be dismissed.</p>

21 <https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf>

**Table 8-A-5 Likely Significant Effects on Arun Valley SAC**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	Arun Valley SAC (UK0030366)
<b>Description of Project</b> <i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:</i>	
<b>Size and scale (road type and probable traffic volume)</b>	111) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.
<b>Land-take</b>	112) There will be no loss of the SAC associated with the proposed works.
<b>Distance from the internationally important wildlife site or key features of the site (from edge of the project assessment corridor)</b>	113) The Scheme lies approximately 6.3 km south of Arun Valley SAC at its closest point.
<b>Resource requirements (from the internationally important wildlife site or from areas in proximity to the site, where of relevance to consideration of impacts)</b>	114) None required

<b>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</b>	115) No part of the Affected Road Network for the scheme lies within 200m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 6.3 km distance separating the Scheme from the SAC and the fact the Scheme is downstream of the SAC.
<b>Excavation requirements (e.g. impacts of local hydrogeology)</b>	116) None
<b>Transportation requirements</b>	117) None
<b>Duration of construction, operation, etc.</b>	118) Construction is currently planned to start in 2024 such that the Scheme will open to traffic in 2027. Operation will be effectively permanent.
<b>Other</b>	119) N/A
<b>Characteristics of internationally important wildlife site(s)</b> <b>A brief description of the internationally important wildlife site should be produced, including information on:</b>	
<b>Name of internationally important wildlife site and its EU code</b>	120) Arun Valley SAC (UK0030366)
<b>Location and distance of the internationally important wildlife site from the proposed works</b>	121) Approximately 6.3 km north of the Scheme
<b>Internationally important wildlife site size</b>	122) Approximately 487.48 ha
<b>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</b>	123) Site is designated for the following: a. Ramshorn snail
<b>Vulnerability of the internationally important wildlife site – any information available from the standard</b>	124) The following threats and pressures are taken from the Natural England Site

<p><b>data forms on potential effect pathways</b></p>	<p>Improvement Plan for Arun Valley SAC<sup>22</sup>, also informed by reference to the Supplementary Advice on the Conservation Objectives<sup>23</sup>:</p> <ul style="list-style-type: none"> <li>a. Inappropriate water levels</li> <li>b. Water pollution</li> <li>c. Inappropriate ditch management</li> </ul>
<p><b>Internationally important wildlife site conservation objectives – where these are readily available</b></p>	<p>125) The Conservation Objectives for Arun Valley SAC state: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>a. The extent and distribution of the habitats of qualifying species;</li> <li>b. The structure and function of the habitats of qualifying species;</li> <li>c. The supporting processes on which the habitats of qualifying species rely;</li> <li>d. The populations of qualifying species; and</li> <li>e. The distribution of qualifying species within the site.</li> </ul>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p>126) The only potential impact pathway is that in a scoping response received in April 2019 Natural England raised a concern that the physical footprint of the Scheme could push the saline wedge higher up the valley and thus which adversely affect some of the Ramsar and SAC species by making the habitats more saline.</p>	
<p><b>Initial Assessment in relation to Arun Valley SAC</b>  The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts.  Describe any likely changes to the site arising as a result of:</p>	

<sup>22</sup> [Site Improvement Plan: Arun Valley - SIP004 \(naturalengland.org.uk\)](http://naturalengland.org.uk)

<sup>23</sup> [European Site Conservation Objectives for Arun Valley SAC - UK0030366 \(naturalengland.org.uk\)](http://naturalengland.org.uk)

<b>Reduction of habitat area</b>	127) None. The SAC is approximately 6.3 km from the Scheme draft order limits
<b>Disturbance to key species</b>	128) None. The SAC is approximately 6.3 km from the Scheme draft order limits
<b>Habitat or species fragmentation</b>	129) None. The SAC is approximately 6.3 km from the Scheme draft order limits and the Ramshorn snail is sedentary. In correspondence regarding the PCF Stage 2 HRA Natural England confirmed that although the species is found outside the SAC boundary it is not found in the vicinity of the Scheme.
<b>Reduction in species density</b>	130) None. The SAC is approximately 6.3 km from the Scheme draft order limits and the Ramshorn snail is sedentary. In correspondence regarding the PCF Stage 2 HRA Natural England confirmed that although the species is found outside the SAC boundary it is not found in the vicinity of the Scheme.
<b>Changes in key indicators of conservation value (water quality etc.)</b>	<p>131) None. The Scheme lies approximately 6.3 km downstream of the SAC. The only potential impact pathway is that Natural England have raised a concern that the Scheme could push the saline wedge higher up the valley and thus adversely affect some of the Ramsar and SAC species by making the habitats more saline.</p> <p>132) The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3 m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur.</p> <p>133) The solution for the A27 crossing of the Arun Valley is a viaduct with a clear span across the river channel. It would have no effect on in channel flows. Modelling undertaken to date has shown that a viaduct would have insignificant effects on any flood plain flows during either extreme tidal or fluvial events even allowing for climate change. Even locally, differences in water depths on the floodplain with the viaduct are typically less than 10mm (equivalent to less than 1% of the typical depth during a fluvial event and less than 0.5% during an extreme tidal event).</p> <p>134) River modelling has been undertaken for both defended and undefended scenarios, i.e., both the current situation and that which would occur if the flood defences were removed following withdrawal of maintenance. In both</p>

	cases the effect of a viaduct crossing on flow paths and depths is insignificant.
<b>Climate change</b>	135) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the scheme to affect European sites through this impact pathway.
<b>Describe any likely impacts on the internationally important wildlife site as a whole in terms of:</b>	
<b>Interference with the key relationships that define the structure of the site</b>	136) None. The Scheme lies approximately 6.3 km downstream of the SAC.
<b>Interference with key relationships that define the function of the site</b>	137) None. Although the potential for the Scheme to push the saline wedge further up the valley towards the River Arun has been investigated, the effect of a viaduct crossing on flow paths and water depths has been modelled to be insignificant.
<b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b>	
<b>Reduction of habitat area</b>	138) No Likely Significant Effect
<b>Disturbance to key species</b>	139) No Likely Significant Effect
<b>Habitat or species fragmentation</b>	140) No Likely Significant Effect
<b>Disruption</b>	141) No Likely Significant Effect
<b>Disturbance</b>	142) No Likely Significant Effect
<b>Change to key elements of the site (e.g. water quality, hydrological regime etc.)</b>	143) No Likely Significant Effect
<b>Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:</b>	
144)	

None	
<b>Outcome of screening stage</b>	<p>145) No Likely Significant Effect, either alone or in combination with the other plans and projects described in the 'Likely Significant Effects' section above.</p> <p>146) The only potential impact pathway is that Natural England have raised a concern that the Scheme could push the saline wedge higher up the valley and thus adversely affect some of the Ramsar and SAC species by making the habitats more saline.</p> <p>147) The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3 m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur.</p> <p>148) The solution for the Scheme crossing of the Arun Valley is a viaduct with a clear span across the river channel. It would have no effect on in channel flows. Modelling undertaken to date has shown that a viaduct would have insignificant effects on any flood plain flows during either extreme tidal or fluvial events even allowing for climate change. Even locally, differences in water depths on the floodplain with the viaduct are typically less than 10 mm (equivalent to less than 1% of the typical depth during a fluvial event and less than 0.5% during an extreme tidal event).</p> <p>149) River modelling has been undertaken for both defended and undefended scenarios, i.e., both the current situation and that which would occur if the flood defences were removed following withdrawal of maintenance. In both cases the effect of a viaduct crossing on flow paths and depths is insignificant.</p> <p>150) Therefore, no likely significant effect will occur either alone or in combination with other plans and projects.</p>
<b>Are the appropriate statutory environmental bodies in agreement</b>	<p>151) At the time of writing, Natural England had not yet been consulted on this report.</p>

<b>with this conclusion?</b>	
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**Table 8-A-6 Likely Significant Effects on Arun Valley SPA**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	Arun Valley SPA (UK9020281)
<b>Description of Project</b> <i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:</i>	
<b>Size and scale (road type and probable traffic volume)</b>	152) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.
<b>Land-take</b>	153) There will be no loss of the SPA associated with the proposed works.
<b>Distance from the internationally important wildlife site or key features of the site (from edge of the project assessment corridor)</b>	154) The Scheme draft order limits lies approximately 6.3 km south of Arun Valley SPA at its closest point.
<b>Resource requirements (from the internationally important wildlife site or from areas in proximity to the</b>	155) None required

<b>site, where of relevance to consideration of impacts)</b>	
<b>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</b>	156) No part of the Affected Road Network for the scheme lies within 200m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 6.3 km distance separating the Scheme draft order limits from the SPA and the fact the Scheme is downstream of the SPA.
<b>Excavation requirements (e.g. impacts of local hydrogeology)</b>	157) None
<b>Transportation requirements</b>	158) None
<b>Duration of construction, operation, etc.</b>	159) Construction is currently planned to start in 2024 such that the Scheme will open to traffic in 2027. Operation will be effectively permanent.
<b>Other</b>	160) N/A
<b>Characteristics of internationally important wildlife site(s)</b> <b>A brief description of the internationally important wildlife site should be produced, including information on:</b>	
<b>Name of internationally important wildlife site and its EU code</b>	161) Arun Valley SPA (UK9020281)
<b>Location and distance of the internationally important wildlife site from the proposed works</b>	162) Approximately 6.3 km north of the Scheme
<b>Internationally important wildlife site size</b>	163) Approximately 530.42 ha
<b>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</b>	164) Site is designated for the following: a. Bewick's swan b. Waterbird assemblage

<p><b>Vulnerability of the internationally important wildlife site – any information available from the standard data forms on potential effect pathways</b></p>	<p>165) The following threats and pressures are taken from the Natural England Site Improvement Plan for Arun Valley SPA<sup>24</sup>, also informed by the Supplementary Advice on the Conservation Objectives<sup>25</sup>:</p> <ul style="list-style-type: none"> <li>a. Inappropriate water levels</li> <li>b. Water pollution</li> <li>c. Inappropriate ditch management</li> <li>d. Loss of functionally-linked habitat</li> <li>e. Disturbance</li> </ul>
<p><b>Internationally important wildlife site conservation objectives – where these are readily available</b></p>	<p>166) The Conservation Objectives for Arun Valley SPA state: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>a. The extent and distribution of the habitats of qualifying species</li> <li>b. The structure and function of the habitats of qualifying species;</li> <li>c. The supporting processes on which the habitats of qualifying species rely;</li> <li>d. The populations of qualifying species; and</li> <li>e. The distribution of qualifying species within the site.</li> </ul>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p>167) The only potential impact pathway is a potential impact on functionally-linked habitat through direct habitat loss, since the SPA Bewick swan population in particular are known to make extensive use of suitable habitat outside the SPA boundary during autumn/ winter.</p>	
<p><b>Initial Assessment in relation to Arun Valley SPA</b></p>	

<sup>24</sup> [Site Improvement Plan: Arun Valley - SIP004 \(naturalengland.org.uk\)](http://naturalengland.org.uk)

<sup>25</sup> [European Site Conservation Objectives for Arun Valley SPA - UK9020281 \(naturalengland.org.uk\)](http://naturalengland.org.uk)

<p><b>The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</b></p>	
<b>Reduction of habitat area</b>	168) None. The SPA is approximately 6.3 km from the Scheme draft order limits.
<b>Disturbance to key species</b>	169) None. The SPA is approximately 6.3 km from the Scheme draft order limits.
<b>Habitat or species fragmentation</b>	170) Possible, discussed further below. Although the SPA is approximately 6.3 km from the Scheme draft order limits Bewick swan in particular is known to make extensive use of habitat beyond the SPA boundary.
<b>Reduction in species density</b>	171) Possible, discussed further below. Although the SPA is approximately 6.3 km from the Scheme draft order limits. Bewick swan in particular is known to make extensive use of habitat beyond the SPA boundary.
<b>Changes in key indicators of conservation value (water quality etc.)</b>	172) None. The Scheme lies approximately 6.3 km downstream of the SPA.
<b>Climate change</b>	173) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the scheme to affect European sites through this impact pathway.
<p><b>Describe any likely impacts on the internationally important wildlife site as a whole in terms of:</b></p>	
<b>Interference with the key relationships that define the structure of the site</b>	174) None. The Scheme lies approximately 6.3 km downstream of the SPA.
<b>Interference with key relationships that define the function of the site</b>	175) Bewick swan is the only species for which the SPA is specifically designated. Bewick swan is known to make extensive use of habitat beyond the SPA boundary. However, policy SD10 of the adopted South Downs Local Plan states <i>'Development proposals on greenfield sites within 5km of the Arun Valley SPA, as shown on the Policies Map, will undertake an appraisal as to whether the land is suitable for wintering Bewick Swan. If it is suitable then surveys will be undertaken to determine whether the fields are of importance to the swan population. If so, appropriate alternative habitat would be required before</i>

	<p><i>development could proceed</i>' on the basis that habitat within 5km of the SPA is most likely to serve as functionally-linked land for the species. Moreover, the standard method of determining whether non-breeding birds use a parcel of land is to undertake surveys during the non-breeding season. Land that supports 1% of above of the SPA population of any qualifying species on a regular basis is deemed to be functionally-linked. Wintering bird surveys for the Scheme were undertaken in 2017 and 2018 and again in 2020/21 covering land in or adjacent to the Scheme draft order limits and recorded no Bewick's swan.</p> <p>176) The species of waterfowl that contribute to the assemblage are not identified by the SPA citation and the SPA is not designated for any of them specifically but rather for supporting a total number of wintering birds. The Supplementary Advice on the Conservation Objectives for the SPA states that in addition to Bewick swan key assemblage species comprise: wigeon, teal, shoveler, pintail, lapwing, ruff, black-tailed godwit and green sandpiper<sup>26</sup>. The only species listed and found at land in or adjacent to the survey area were teal, lapwing and green sandpiper. Teal was recorded on two occasions (out of 24 winter survey visits between 2017 and 2018) in small numbers only, constituting infrequent use by well below 1% of the SPA population of the species. The bird baseline report concludes that teal use habitats within the Scheme <i>"very infrequently and are not habitually using this area of the Arun Valley"</i>. In the 2020/21 winter surveys, no teal were recorded. Three green sandpiper were recorded but only on a single visit in October 2020. A peak count of 675 lapwing were recorded on the eastern transect but again only on one occasion (November 2020) and the wintering bird PEIR appendix notes that lapwing are a common winter visitor in the area with peak average monthly counts of 5,279 in February 2019.</p>
<p><b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b></p>	
<p><b>Reduction of habitat area</b></p>	<p>177) No Likely Significant Effect</p>
<p><b>Disturbance to key species</b></p>	<p>178) No Likely Significant Effect</p>

<b>Habitat or species fragmentation</b>	179) No Likely Significant Effect
<b>Disruption</b>	180) No Likely Significant Effect
<b>Disturbance</b>	181) No Likely Significant Effect
<b>Change to key elements of the site (e.g. water quality, hydrological regime etc.)</b>	182) No Likely Significant Effect
<b>Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:</b>	
183) None.	
<b>Outcome of screening stage</b>	<p>184) No Likely Significant Effect, either alone or in combination with the other plans and projects described in the 'Likely Significant Effects' section above.</p> <p>185) There is no evidence that Bewick swan make use of land near or within the Scheme draft order limits. There is also no evidence that any birds that make up the non-breeding assemblage of the SPA make significant use (i.e. use by more than 1% of the SPA population on a regular basis) of farmland in or close to the Scheme footprint. While three species on the assemblage have been recorded in non-breeding bird surveys over two years of survey (2017/18 and 2020/21) they were all only recorded on single occasions. As such, there is no evidence that significant functionally-linked habitat for SPA birds lies within or close to the Scheme. Therefore, no likely significant effect will arise either alone or in combination with other plans and projects.</p>
<b>Are the appropriate statutory environmental bodies in agreement with this conclusion?</b>	186) At the time of writing, Natural England had not yet been consulted on this report.

**Table 8-A-7 Likely Significant Effects on Arun Valley Ramsar site**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	Arun Valley Ramsar site (UK11004)
<b>Description of Project</b> <i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:</i>	
<b>Size and scale (road type and probable traffic volume)</b>	187) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.
<b>Land-take</b>	188) There will be no loss of the Ramsar site associated with the proposed works.
<b>Distance from the internationally important wildlife site or key features of the site (from edge of the project assessment corridor)</b>	189) The Scheme lies approximately 6.3 km south of Arun Valley Ramsar site at its closest point.
<b>Resource requirements (from the internationally important wildlife site or from areas in proximity to the site, where of relevance to consideration of impacts)</b>	190) None required

<b>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</b>	<p>191) No part of the Affected Road Network for the scheme lies within 200m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 6.3 km distance separating the Scheme from the Ramsar site and the fact the Scheme is downstream of the Ramsar site.</p> <p>192) The only potential impact pathway is that Natural England have raised a concern that the Scheme could push the saline wedge higher up the valley and thus which adversely affect some of the Ramsar and SAC species by making the habitats more saline.</p>
<b>Excavation requirements (e.g. impacts of local hydrogeology)</b>	<p>193) None</p>
<b>Transportation requirements</b>	<p>194) None</p>
<b>Duration of construction, operation, etc.</b>	<p>195) Construction is currently planned to start in 2024 such that the Scheme will open to traffic in 2027. Operation will be effectively permanent.</p>
<b>Other</b>	<p>196) N/A</p>
<b>Characteristics of internationally important wildlife site(s)</b> <b>A brief description of the internationally important wildlife site should be produced, including information on:</b>	
<b>Name of internationally important wildlife site and its EU code</b>	<p>197) Arun Valley SPA (UK9020281)</p>
<b>Location and distance of the internationally important wildlife site from the proposed works</b>	<p>198) Approximately 6.3 km north of the Scheme</p>
<b>Internationally important wildlife site size</b>	<p>199) Approximately 528.62 ha</p>
<b>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</b>	<p>200) Site is designated for the following:</p> <ol style="list-style-type: none"> <li>a. Ramsar criterion 2 - The site holds seven wetland invertebrate species listed in the British Red Data Book as threatened, including the lesser ramshorn whirlpool snail already discussed under the SAC designation. One of these, <i>Pseudamnicola confusa</i>, is considered to be endangered.</li> </ol>

	<p>The site also supports four nationally rare and four nationally scarce plant species.</p> <p>b. Ramsar criterion 3 - In addition to the Red Data Book invertebrate and plant species, the ditches intersecting the site have a particularly diverse and rich flora. All five British duckweed <i>Lemna</i> species, all five water-cress <i>Rorippa</i> species, and all three British water milfoils (<i>Myriophyllum</i> species), all but one of the seven British water dropworts (<i>Oenanthe</i> species), and two-thirds of the British pondweeds (<i>Potamogeton</i> species) can be found on site.</p> <p>c. Bewick's swan</p> <p>d. Waterbird assemblage</p>
<p><b>Vulnerability of the internationally important wildlife site – any information available from the standard data forms on potential effect pathways</b></p>	<p>201) The following threats and pressures are taken from the Natural England Site Improvement Plan for Arun Valley SAC and SPA, supplemented by consideration of the Supplementary Advice on the Conservation Objectives and thus will also apply to the Ramsar site:</p> <p>a. Inappropriate water levels</p> <p>b. Water pollution</p> <p>c. Inappropriate ditch management</p> <p>d. Loss of functionally-linked habitat</p> <p>e. Disturbance</p>
<p><b>Internationally important wildlife site conservation objectives – where these are readily available</b></p>	<p>202) See the Conservation Objectives for the Arun Valley SAC and SPA. Ramsar sites do not have separate conservation objectives.</p>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p>203) The only potential impact pathways are the potential footprint across the Arun valley pushing the saline wedge further upstream, and potential impact on functionally-linked habitat due to the Scheme footprint, since the Ramsar Bewick swan population in particular are known to make extensive use of suitable habitat outside the Ramsar boundary during autumn/winter.</p>	
<p><b>Initial Assessment in relation to Arun Valley Ramsar site</b></p>	

<p><b>The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</b></p>	
<p><b>Reduction of habitat area</b></p>	<p>204) None. The Ramsar is approximately 6.3 km from the Scheme draft order limits.</p>
<p><b>Disturbance to key species</b></p>	<p>205) None. The Ramsar is approximately 6.3 km from the Scheme draft order limits.</p>
<p><b>Habitat or species fragmentation</b></p>	<p>206) Possible, discussed further below. Although the Ramsar site is approximately 6.3 km from the Scheme draft order limits Bewick swan in particular is known to make extensive use of habitat beyond the Ramsar boundary. The Ramshorn snail and plant/invertebrate species of the Ramsar site are essentially sedentary. In correspondence regarding the PCF Stage 2 HRA Natural England confirmed that although the species is found outside the SAC boundary it is not found in the vicinity of the Scheme.</p>
<p><b>Reduction in species density</b></p>	<p>207) Possible, discussed further below. Although the Ramsar site is approximately 6.3 km from the Scheme draft order limits. Bewick swan in particular is known to make extensive use of habitat beyond the Ramsar boundary. The Ramshorn snail and plant/invertebrate species of the Ramsar site are essentially sedentary. In correspondence regarding the PCF Stage 2 HRA Natural England confirmed that although the species is found outside the SAC boundary it is not found in the vicinity of the Scheme.</p>
<p><b>Changes in key indicators of conservation value (water quality etc.)</b></p>	<p>208) None. The Scheme lies approximately 6.3 km downstream of the Ramsar site.</p> <p>209) The only potential impact pathway is that Natural England have raised a concern that the Scheme could push the saline wedge higher up the valley and thus which adversely affect some of the Ramsar and SAC species by making the habitats more saline.</p> <p>210) The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur.</p> <p>211) The solution for the A27 crossing of the Arun Valley is a viaduct with a clear span across the river channel. It would have no effect on in channel flows. Modelling undertaken to date has shown that a viaduct would have insignificant</p>

	<p>effects on any flood plain flows during either extreme tidal or fluvial events even allowing for climate change. Even locally, differences in water depths on the floodplain with the viaduct are typically less than 10mm (equivalent to less than 1% of the typical depth during a fluvial event and less than 0.5% during an extreme tidal event).</p> <p>212) River modelling has been undertaken for both defended and undefended scenarios, i.e., both the current situation and that which would occur if the flood defences were removed following withdrawal of maintenance. In both cases the effect of a viaduct crossing on flow paths and depths is insignificant.</p>
<p><b>Climate change</b></p>	<p>213) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the scheme to affect European sites through this impact pathway.</p>
<p><b>Describe any likely impacts on the internationally important wildlife site as a whole in terms of:</b></p>	
<p><b>Interference with the key relationships that define the structure of the site</b></p>	<p>214) None. The Scheme lies approximately 6.3 km downstream of the Ramsar site.</p>
<p><b>Interference with key relationships that define the function of the site</b></p>	<p>215) Bewick swan is the only species for which the SPA is specifically designated. Bewick swan is known to make extensive use of habitat beyond the SPA boundary. However, policy SD10 of the adopted South Downs Local Plan states <i>'Development proposals on greenfield sites within 5km of the Arun Valley SPA, as shown on the Policies Map, will undertake an appraisal as to whether the land is suitable for wintering Bewick Swan. If it is suitable then surveys will be undertaken to determine whether the fields are of importance to the swan population. If so, appropriate alternative habitat would be required before development could proceed'</i> on the basis that habitat within 5km of the SPA is most likely to serve as functionally-linked land for the species. Moreover, the standard method of determining whether non-breeding birds use a parcel of land is to undertake surveys during the non-breeding season. Land that supports 1% of above of the SPA population of any qualifying species on a regular basis is deemed to be functionally-linked. Wintering bird surveys for the Scheme were undertaken in 2017 and 2018 and again in 2020/21 covering land in or adjacent to the Scheme draft order limits and recorded no Bewick's swan.</p>

	<p>216) The species of waterfowl that contribute to the assemblage are not identified by the SPA citation and the SPA is not designated for any of them specifically but rather for supporting a total number of wintering birds. The Supplementary Advice on the Conservation Objectives for the SPA states that this comprises, in addition to Bewick swan: wigeon, teal, shoveler, pintail, lapwing, ruff, black-tailed godwit and green sandpiper<sup>27</sup>. The only species listed and found at land in or adjacent to the survey area were teal, lapwing and green sandpiper. Teal was recorded on two occasions (out of 24 winter survey visits between 2017 and 2018) in small numbers only, constituting infrequent use by well below 1% of the SPA population of the species. The bird baseline report concludes that teal use habitats within the Scheme “<i>very infrequently and are not habitually using this area of the Arun Valley</i>”. In the 2020/21 winter surveys, no teal were recorded. Three green sandpiper were recorded but only on a single visit in October 2020. A peak count of 675 lapwing were recorded on the eastern transect but again only on one occasion (November 2020) and the wintering bird PEIR appendix notes that lapwing are a common winter visitor in the area with a peak average county monthly counts of 5,279 in February 2019.</p>
<p><b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b></p>	
<p><b>Reduction of habitat area</b></p>	<p>217) No Likely Significant Effect</p>
<p><b>Disturbance to key species</b></p>	<p>218) No Likely Significant Effect</p>
<p><b>Habitat or species fragmentation</b></p>	<p>219) No Likely Significant Effect</p>
<p><b>Disruption</b></p>	<p>220) No Likely Significant Effect</p>
<p><b>Disturbance</b></p>	<p>221) No Likely Significant Effect</p>
<p><b>Change to key elements of the site (e.g. water quality, hydrological regime etc.)</b></p>	<p>222) No Likely Significant Effect</p>

<sup>27</sup> <http://publications.naturalengland.org.uk/publication/4567444756627456>

*Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:*

223)

None.

**Outcome of screening stage**

No Likely Significant Effect, either alone or in combination with the other plans and projects described in the 'Likely Significant Effects' section above.

224) There is no evidence that Bewick swan make use of land near or within the Scheme draft order limits. There is also no evidence that any birds that make up the non-breeding assemblage of the SPA make significant use (i.e. use by more than 1% of the SPA population on a regular basis) of farmland in or close to the Scheme footprint. While three species on the assemblage have been recorded in non-breeding bird surveys over two years of survey (2017/18 and 2020/21) they were all only recorded on single occasions. The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur.

225) The preferred solution for the A27 crossing of the Arun Valley is a viaduct with a clear span across the river channel. It would have no effect on in channel flows. Modelling undertaken to date has shown that a viaduct would have insignificant effects on any flood plain flows during either extreme tidal or fluvial events even allowing for climate change. Even locally, differences in water depths on the floodplain with the viaduct are typically less than 10mm (equivalent to less than 1% of the typical depth during a fluvial event and less than 0.5% during an extreme tidal event).

226) River modelling has been undertaken for both defended and undefended scenarios, i.e. both the current situation and that which would occur if the flood defences were removed following withdrawal of maintenance. In both cases the effect of a viaduct crossing on flow paths and depths is insignificant.

	227) As a result, no likely significant effect will arise, either alone or in combination with other plans and projects.
<b>Are the appropriate statutory environmental bodies in agreement with this conclusion?</b>	228) At the time of writing, Natural England had not yet been consulted regarding this report.

**Table 8-A-8 Likely Significant Effects on Solent and Dorset Coast SPA**

<b>Project Name:</b>	A27 Arundel Bypass
<b>Designated Site under Consideration:</b>	Solent and Dorset Coast SPA (UK9020330)
<b>Description of Project</b> <i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the internationally important wildlife site by virtue of:</i>	
<b>Size and scale (road type and probable traffic volume)</b>	229) A bypass is proposed on the A27 which will feature approximately 8 km of new dual two-lane carriageway located to the south of the existing A27. It will tie-in in the west, east of the A27/A29 Fontwell (east) roundabout to the west of Arundel, and tie-in in the east at the A27 Crossbush junction. This bypass will carry approximately 30,000 Annual Average Daily Traffic based on current forecasts.
<b>Land-take</b>	230) There will be no loss of the SPA associated with the proposed works as the SPA covers open water in the marine environment.
<b>Distance from the internationally important wildlife site or key features of the site (from edge of the project)</b>	231) The Scheme lies approximately 5.1 km north of the Solent and Dorset Coast SPA at its closest point.

<b>assessment corridor)</b>	
<b>Resource requirements (from the internationally important wildlife site or from areas in proximity to the site, where of relevance to consideration of impacts)</b>	232) None required
<b>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</b>	233) No part of the Affected Road Network for the scheme lies within 200m of this site so air quality emissions are not relevant. No surface water runoff issues will arise given the approximate 5.1 km distance separating the Scheme from the SPA and the fact that the River Arun does not drain into the SPA but into Sussex Bay approximately 4.4 km to the east of the SPA.
<b>Excavation requirements (e.g. impacts of local hydrogeology)</b>	234) None
<b>Transportation requirements</b>	235) None
<b>Duration of construction, operation, etc.</b>	236) Construction is currently planned to start in 2024 such that the Scheme would open to traffic in 2027. Operation will be effectively permanent.
<b>Other</b>	237) N/A
<b>Characteristics of internationally important wildlife site(s)</b> <b>A brief description of the internationally important wildlife site should be produced, including information on:</b>	
<b>Name of internationally important wildlife site and its EU code</b>	238) Solent and Dorset Coast SPA (UK9020330)

<p><b>Location and distance of the internationally important wildlife site from the proposed works</b></p>	<p>239) Approximately 5.1 km south of the Scheme, on the opposite side of the settlement of Bognor Regis</p>
<p><b>Internationally important wildlife site size</b></p>	<p>240) Approximately 88,980.55 ha</p>
<p><b>Key features of the internationally important wildlife site including the primary reasons for selection and any other qualifying interests</b></p>	<p>241) Site is designated to protect the open water marine foraging habitat of the breeding common, little and Sandwich tern populations of the various SPAs of the Solent and Dorset Coast (the closest of which to the Scheme is Pagham Harbour SPA approximately 11.8 km to the south-west), as these other SPAs only protect the nesting habitat of those species.</p>
<p><b>Vulnerability of the internationally important wildlife site – any information available from the standard data forms on potential effect pathways</b></p>	<p>242) The following threats and pressures are taken from the Natural England Site Improvement Plan for the Solent internationally important wildlife sites<sup>28</sup> and will apply to the open coastal water Solent and Dorset Coast SPA:</p> <ul style="list-style-type: none"> <li>a. Fisheries</li> <li>b. Water pollution</li> <li>c. Changes in prey species distributions</li> </ul>
<p><b>Internationally important wildlife site conservation objectives – where these are readily available</b></p>	<p>243) The Conservation Objectives for Solent &amp; Dorset Coast SPA<sup>29</sup> state: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> <li>a. The extent and distribution of the habitats of qualifying species;</li> <li>b. The structure and function of the habitats of qualifying species;</li> </ul>

<sup>28</sup> [Site Improvement Plan: Solent - SIP043 \(naturalengland.org.uk\)](#)

<sup>29</sup> [Marine site detail \(naturalengland.org.uk\)](#)

	<ul style="list-style-type: none"> <li>c. The supporting processes on which the habitats of qualifying species rely;</li> <li>d. The populations of qualifying species; and</li> <li>e. The distribution of qualifying species within the site.</li> </ul>
<p><b>Assessment Criteria</b>  Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the internationally important wildlife site.</p>	
<p>244) No potential impact pathway has been identified linking the Scheme to the internationally important wildlife site</p>	
<p><b>Initial Assessment in relation to Solent and Dorset Coast SPA</b>  The key characteristics of the site and the details of the internationally important wildlife site should be considered in identifying potential impacts.  Describe any likely changes to the site arising as a result of:</p>	
<p><b>Reduction of habitat area</b></p>	<p>245) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.</p>
<p><b>Disturbance to key species</b></p>	<p>246) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.</p>
<p><b>Habitat or species fragmentation</b></p>	<p>247) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.</p>
<p><b>Reduction in species density</b></p>	<p>248) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.</p>
<p><b>Changes in key indicators of conservation value (water quality etc.)</b></p>	<p>249) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.</p>
<p><b>Climate change</b></p>	<p>250) None. Reduced congestion will have no adverse effect on climate change and there is no mechanism for the scheme to affect European sites through this impact pathway.</p>
<p><b>Describe any likely impacts on the internationally important wildlife site as a whole in terms of:</b></p>	
<p><b>Interference with the key relationships that define the</b></p>	<p>251) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.</p>

<b>structure of the site</b>	
<b>Interference with key relationships that define the function of the site</b>	252) None. The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it.
<b>Indicate the significance as a result of the identification of impacts set out above in terms of:</b>	
<b>Reduction of habitat area</b>	253) No Likely Significant Effect
<b>Disturbance to key species</b>	254) No Likely Significant Effect
<b>Habitat or species fragmentation</b>	255) No Likely Significant Effect
<b>Disruption</b>	256) No Likely Significant Effect
<b>Disturbance</b>	257) No Likely Significant Effect
<b>Change to key elements of the site (e.g. water quality, hydrological regime etc.)</b>	258) No Likely Significant Effect
<b>Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:</b>	
259) None.	
<b>Outcome of screening stage</b>	260) No Likely Significant Effect, either alone or in combination with the other plans and projects described in the 'Likely Significant Effects' section above. 261) The SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it. No likely significant effect will therefore arise either alone or in combination with other plans and projects.
<b>Are the appropriate statutory environmental bodies in</b>	262) At the time of writing, Natural England had not yet been consulted on this report.

<b>agreement with this conclusion?</b>	
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## Conclusion

23. This report has considered the potential for Likely Significant Effects, alone or in combination with other plans and projects, on The Mens SAC, Ebernoe Common SAC, Singleton & Cocking Tunnels SAC, the Arun Valley SAC, SPA and Ramsar site and Solent & Dorset Coast SPA. It is concluded that there will be no Likely Significant Effects on any internationally important wildlife sites except for Singleton & Cocking Tunnels SAC where the potential for an effect due to disruption of commuting bats (prior to consideration of any mitigation in line with case law) cannot be dismissed at this stage using the precautionary principle and the fact that the SAC does lie within the distance from the Scheme that radio-tracking has shown will be travelled by barbastelle bats associated with other West Sussex SACs. Singleton and Cocking Tunnels SAC will therefore be taken forward to Appropriate Assessment. A Report to Inform Appropriate Assessment for the SAC will be submitted as part of the DCO.

## Appendix 8-A-1 Advice Note 10 HRA Screening Matrices

### Potential Effects

Potential effects upon the internationally important wildlife site(s)<sup>1</sup> which are considered in this HRA report are provided below.

#### Effects considered within the screening matrices

Designation	Effects described in submission information	Presented in screening matrices as
The Mens SAC	Loss of functionally linked habitat or disruption of commuting routes	Disruption of commuting
Ebernoe Common SAC	Loss of functionally linked habitat or disruption of commuting routes	Disruption of commuting
Singleton and Cocking Tunnels SAC	Loss of functionally linked habitat or disruption of commuting routes	Disruption of commuting
Arun Valley SAC	Movement of saline wedge up the valley	Saline wedge
Arun Valley SPA	Loss of functionally linked land	Functionally-linked land
Arun Valley Ramsar site	Movement of saline wedge up the valley Loss of functionally linked land	Saline wedge Functionally linked land

<sup>1</sup> As defined in Advice Note 10.

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Solent & Dorset Coast SPA	Any pathway	Any pathway
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## STAGE 1: SCREENING MATRICES

Evidence for, or against, likely significant effects on the internationally important wildlife site(s) and its qualifying feature(s) is detailed within the footnotes to the screening matrices below.

### Matrix Key:

✓ = Likely significant effect **cannot** be excluded

✗ = Likely significant effect **can** be excluded

C = construction

O = operation

D = decommissioning

Where no impact pathway exists at all, the relevant box is shaded grey

### HRA Screening Matrix 1: The Mens SAC

<b>Name of internationally important wildlife site and designation: The Mens SAC</b>						
<b>EU Code: UK0012716</b>						
<b>Distance to NSIP: approximately 14.5 km</b>						
<b>Internationally important wildlife site features</b>	<b>Likely effects of NSIP</b>					
<i>Effect</i>	<i>Disruption of commuting</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>9120 Atlantic acidophilous beech forest</i>						
<i>1308 Barbastelle</i>	<b>X a</b>			<b>X a</b>		

#### Evidence supporting conclusions:

- a. Table 8-A-1 and paragraph 16 of this report set out the Sussex Bat Protocol agreed with Natural England and various local authorities (notably South Downs National Park Authority) and which, based on radio-tracking for Ebernoe Common SAC and The Mens SAC, identifies the wider conservation area around the Sussex Bat SACs as 12 km. The Scheme lies well outside this zone at approximately 14.5 km from the SAC. Paragraph 35 of this report identifies that in an April 2019 scoping response following a Discretionary Advice Service request, Natural England agreed no likely significant effect would arise due to distance.

## HRA Screening Matrix 2: Ebernoe Common SAC

<b>Name of internationally important wildlife site and designation: Ebernoe Common SAC</b>						
<b>EU Code: UK0012715</b>						
<b>Distance to NSIP: approximately 18 km</b>						
<b>Internationally important wildlife site features</b>				<b>Likely effects of NSIP</b>		
<i>Effect</i>	<i>Disruption of commuting</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>9120 Atlantic acidophilous beech forest</i>						
<i>1308 Barbastelle</i>	<b>X b</b>			<b>X b</b>		
<i>1323 Bechstein bat</i>	<b>X b</b>			<b>X b</b>		

### Evidence supporting conclusions:

- b. Table 8-A-1 and paragraph 51 of this report sets out the Sussex Bat Protocol agreed with Natural England and various local authorities (notably South Downs National Park Authority) and which, based on radio-tracking for Ebernoe Common SAC and The Mens SAC, identifies the zone wider conservation area around the Sussex Bat SACs as 12 km. The Scheme lies well outside this zone at approximately 18 km from the SAC. Paragraph 69 of this report identifies that in an April 2019 scoping response following a Discretionary Advice Service request, Natural England agreed no likely significant effect would arise due to distance.

### HRA Screening Matrix 3: Singleton & Cocking Tunnels SAC

<b>Name of internationally important wildlife site and designation: Singleton &amp; Cocking Tunnels SAC</b>						
<b>EU Code: UK0030337</b>						
<b>Distance to NSIP: approximately 10.5 km</b>						
<b>Internationally important wildlife site features</b>	<b>Likely effects of NSIP</b>					
<i>Effect</i>	<i>Disruption of commuting</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>1323 Bechstein bat</i>	✓ c			✓ c		
<i>1308 Barbastelle</i>	✓ c			✓ c		

#### Evidence supporting conclusions:

- c. Paragraphs 107 and 108 of this report state that the only potential impact pathway is loss of functionally-linked habitat or disruption of commuting routes due to loss of commuting features and connectivity as a result of the Scheme. As a result of radio-tracking work of barbastelle use of the land around Ebernoe Common and The Mens SAC the ‘Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol’ (2017) has been created by Natural England and SDNPA. This identifies suitable habitat up to 12 km from The Mens SAC and Ebernoe Common SAC as ‘the wider conservation area which is the full extent of the range of foraging areas required by the bats’. The same 12 km distance is also applied to Singleton & Cocking Tunnels SAC in the Sussex Bat Protocol as the bats associated with SAC (particularly barbastelle) can be actively foraging in winter. There has been no formal research to determine the areas and/ or distances that the hibernating bat features of the Tunnels SAC disperse to outside of the hibernating season. While there is no specific evidence that bats from this area hibernate at the SAC the possibility remains. Paragraph 110 of this report states

that in a scoping response received in April 2019 to a Discretionary Advice Service request, Natural England considered that likely significant effects from the Scheme on this SAC could not be dismissed.

**HRA Screening Matrix 4: Arun Valley SAC**

<b>Name of internationally important wildlife site and designation: Arun Valley SAC</b>						
<b>EU Code: UK0030366</b>						
<b>Distance to NSIP: approximately 6.3 km</b>						
<b>Internationally important wildlife site features</b>		<b>Likely effects of NSIP</b>				
<i>Effect</i>	<i>Saline wedge</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>4056 Ramshorn snail</i>	<b>X d</b>			<b>X d</b>		

**Evidence supporting conclusions:**

- d. Paragraphs 155 to 150 of this report indicate that the only potential impact pathway is that Natural England have raised a concern that the Scheme could push the saline wedge higher up the valley and thus adversely affect some of the Ramsar and SAC species by making the habitats more saline. The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur. The preferred solution for the A27 crossing of the Arun Valley is a viaduct with a clear span across the river channel. It would have no effect on in channel flows. Modelling undertaken to date has shown that a viaduct would have insignificant effects on any flood plain flows during either extreme tidal or fluvial events even allowing for climate change. Even locally, differences in water depths on the floodplain with the viaduct are typically less than 10mm (equivalent to less than 1% of the typical depth during a fluvial event and less than 0.5% during an extreme tidal event). River modelling has

been undertaken for both defended and undefended scenarios, i.e. both the current situation and that which would occur if the flood defences were removed following withdrawal of maintenance. In both cases the effect of a viaduct crossing on flow paths and depths is insignificant. Therefore, no likely significant effect will occur either alone or in combination with other plans and projects.

### HRA Screening Matrix 5: Arun Valley SPA

<b>Name of internationally important wildlife site and designation: Arun Valley SPA</b>						
<b>EU Code: UK9020281</b>						
<b>Distance to NSIP: approximately 6.3 km</b>						
<b>Internationally important wildlife site features</b>				<b>Likely effects of NSIP</b>		
<i>Effect</i>	<i>Functionally linked land</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>A037 Bewick's swan (non-breeding)</i>	<b>X e</b>			<b>X e</b>		
<i>Waterbird assemblage</i>	<b>X e</b>			<b>X e</b>		

#### Evidence supporting conclusions:

- e. Paragraphs 184 and 185 of this report state that there is no evidence of significant functionally-linked habitat for SPA birds within or close to the Scheme footprint. Therefore, no likely significant effect will arise either alone or in combination with other plans and projects.

### HRA Screening Matrix 6: Arun Valley Ramsar site

<b>Name of internationally important wildlife site and designation: Arun Valley Ramsar site</b>									
<b>EU Code: UK11004</b>									
<b>Distance to NSIP: approximately 6.3 km</b>									
<b>Internationally important wildlife site features</b>	<b>Likely effects of NSIP</b>								
<i>Effect</i>	<i>Saline wedge</i>			<i>Functionally linked land</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Wetland invertebrates</i>	<b>X f</b>						<b>X f</b>		
<i>Diverse ditch flora</i>	<b>X f</b>						<b>X f</b>		
<i>Wintering birds</i>				<b>X g</b>			<b>X g</b>		

**Evidence supporting conclusions:**

- f. Paragraphs 226 to 229 indicate that the only potential impact pathway is that Natural England have raised a concern that the Scheme could push the saline wedge higher up the valley and thus adversely affect some of the Ramsar and SAC species by making the habitats more saline. The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur. The preferred solution for the A27 crossing of the Arun Valley is a viaduct with a clear span across the river channel. It would have no effect on in channel flows. Modelling undertaken to date has shown that a viaduct would have insignificant effects

on any flood plain flows during either extreme tidal or fluvial events even allowing for climate change. Even locally, differences in water depths on the floodplain with the viaduct are typically less than 10mm (equivalent to less than 1% of the typical depth during a fluvial event and less than 0.5% during an extreme tidal event). River modelling has been undertaken for both defended and undefended scenarios, i.e., both the current situation and that which would occur if the flood defences were removed following withdrawal of maintenance. In both cases the effect of a viaduct crossing on flow paths and depths is insignificant. Therefore, no likely significant effect will occur either alone or in combination with other plans and projects.

- g. Paragraph 225 states that there is no evidence of Ramsar birds making significant use of land within or close to the Scheme footprint.

### HRA Screening Matrix 7: Solent and Dorset Coast SPA

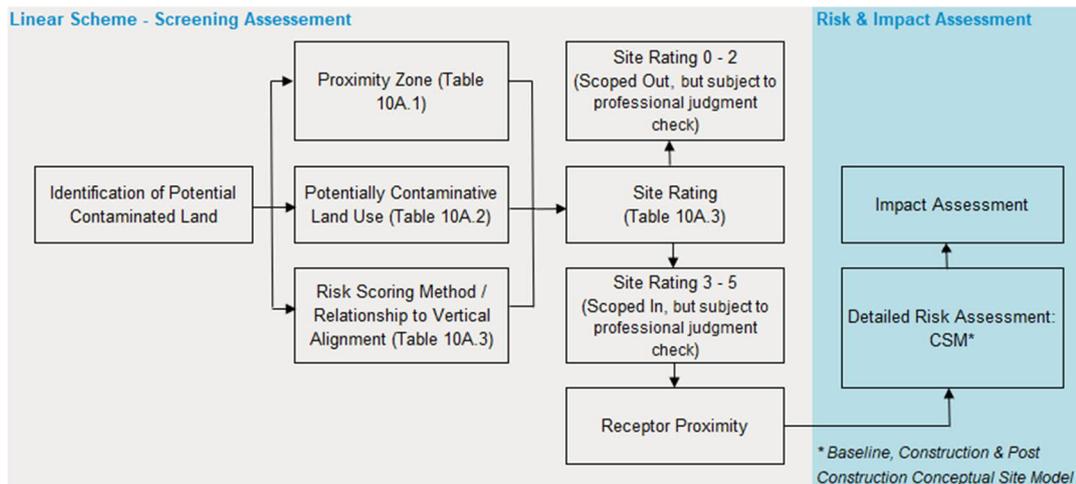
<b>Name of internationally important wildlife site and designation: Solent and Dorset Coast SPA</b>						
<b>EU Code: UK0030366</b>						
<b>Distance to NSIP: approximately 6.3 km</b>						
<b>Internationally important wildlife site features</b>				<b>Likely effects of NSIP</b>		
<i>Effect</i>	<i>Any pathway</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>A191 Sterna sandvicensis; Sandwich tern (Breeding)</i>	<b>X h</b>			<b>X h</b>		
<i>A193 Sterna hirundo; Common tern (Breeding)</i>	<b>X h</b>			<b>X h</b>		
<i>A195 Sternula albifrons; Little tern (Breeding)</i>	<b>X h</b>			<b>X h</b>		

**Evidence supporting conclusions:**

- h. Paragraph 263 states that the SPA is approximately 5.1 km from the Scheme draft order limits and not connected to it. No likely significant effect will therefore arise either alone or in combination with other plans and projects.

## Appendix 9-A Land Contamination Methodology

1. A qualitative screening assessment of the potential land contamination within the geology and soils study area (the draft Order Limits plus 250m), has been undertaken by first assigning a 'site rating' to each identified historical or current area of potential land contamination identified in the baseline review.
2. The site rating has been determined using the tables provided in this appendix. The site rating is based partly on the relationship between the identified area of potential land contamination and its proximity to the Scheme (Table 9-A-1), together with the vertical alignment of the Scheme design at its closest point e.g., cutting/ at grade, viaduct/ embankment and also bored tunnel, although this option is not applicable to the Scheme. The site rating also considers the nature of the current and/ or historical land use, as certain land uses typically result in a greater potential for contamination of the ground to have occurred (Table 9-A-2). The lower the site rating then the lower the risk. Professional judgement has been applied in reviewing the generated site ratings. Generally, site ratings of two or less are considered not to pose a significant risk and will not be considered for further assessment. Site ratings of three or more will be considered for further risk and impact assessment as part of the EIA. A flow chart summarising the screening, risk and impact assessment steps is presented below.



**Table 9-A-1: Proximity zone definition**

<b>Zone No.</b>	<b>Definition</b>
Zone 1	All land within the (draft) Order Limits and including a 10 m margin either side.
Zone 2	All land within 50 m of the edge of Zone 1 land.
Zone 3	All land from between 50 m and 250 m from the edge of Zone 1 land.

**Table 9-A-2: Potentially contaminative land uses (examples)**

<b>Class</b>	<b>Generic Description</b>	<b>Typical Land Uses</b>
Class 1	Low risk of potential contamination, or less hazardous chemicals in use	Farms (ancillary buildings and areas for storing chemicals and fuel)
		Warehouses
		Goods yards
		Hospitals
		Builders yards
		Retail and business parks
Class 2	Medium risk of potential contamination, more hazardous chemicals in possible use	Engineering workshops
		Railways/ disused railway lines
		Brick works
		Dry cleaners (retail)
		Sewage works
		Former clay pits and quarries
		Cement/ asphalt works
		Car breakers
		Garage workshops

Class	Generic Description	Typical Land Uses
		Waste transfer facilities Paper works Power stations Glass works Timber treatment works Foot and mouth burials Metal manufacturing and plating Depots Scrap yards
Class 3	High risk of potential contamination, hazardous chemicals likely to be present	Gas and coke works Landfills and historic landfills Petrol filling stations Oil depots Iron and steel works Historical foundries Chemical works

**Table 9-A-3: Risk scoring method**

Potentially Contaminative Land Use Class	Proximity to Route	Vertical Alignment	Risk Score
Class 1 Low Risk	Zone 1	Viaduct/ Embankment	2
		Cutting/ At Grade	3
		Bored Tunnel	0
	Zone 2	Viaduct/ Embankment	1
		Cutting/ At Grade	2
		Bored Tunnel	0
	Zone 3	Viaduct/ Embankment	0
		Cutting/ At Grade	1
		Bored Tunnel	0
Class 2 Medium Risk	Zone 1	Viaduct/ Embankment	3
		Cutting/ At Grade	4
		Bored Tunnel	2
	Zone 2	Viaduct/ Embankment	2
		Cutting/ At Grade	3
		Bored Tunnel	2
	Zone 3	Viaduct/ Embankment	1
		Cutting/ At Grade	2
		Bored Tunnel	1
Class 3 High Risk	Zone 1	Viaduct/ Embankment	4
		Cutting/ At Grade	5
		Bored Tunnel	3

<b>Potentially Contaminative Land Use Class</b>	<b>Proximity to Route</b>	<b>Vertical Alignment</b>	<b>Risk Score</b>
	Zone 2	Viaduct/ Embankment	3
		Cutting/ At Grade	4
		Bored Tunnel	3
	Zone 3	Viaduct/ Embankment	2
		Cutting/ At Grade	3
		Bored Tunnel	2

## Appendix 13-A WFD Scoping Report

### Introduction

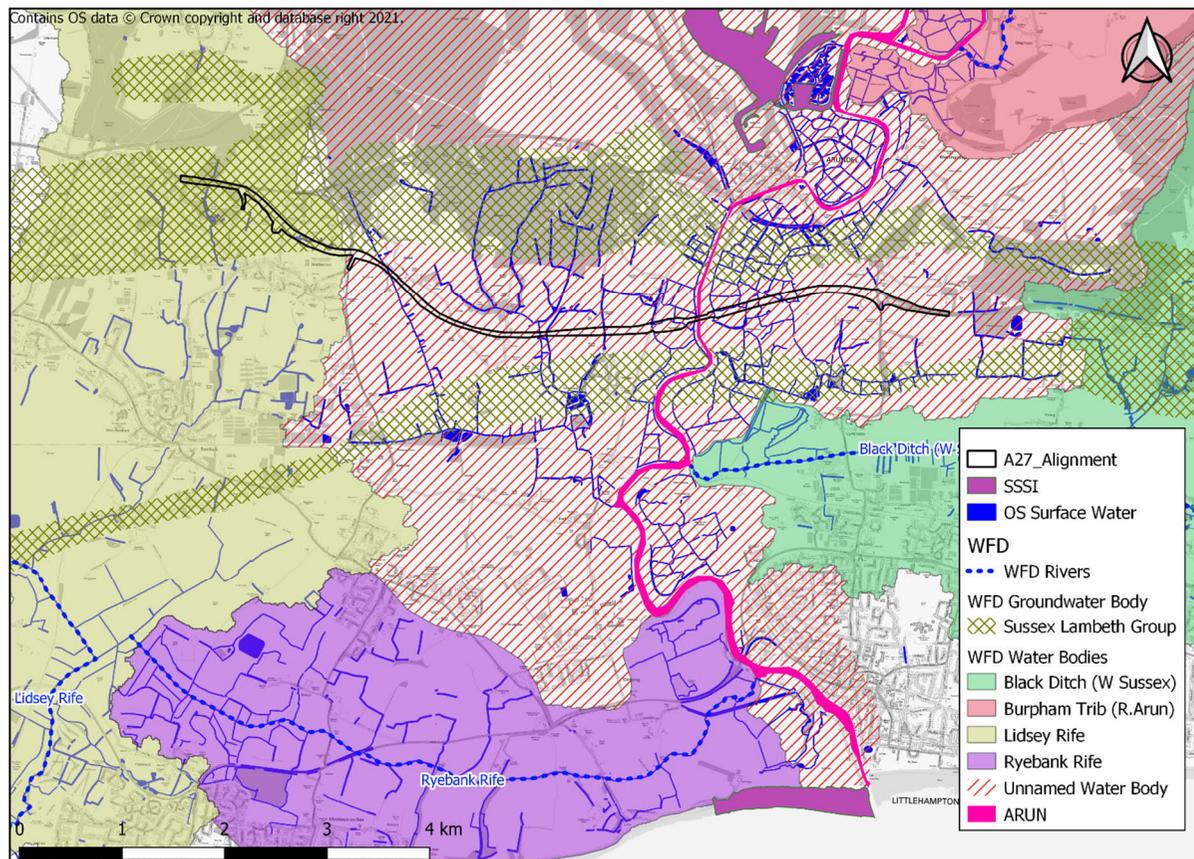
#### Background

1. This Water Framework Directive (WFD) Screening and Scoping Assessment has been produced for the A27 Arundel Bypass road scheme (hereafter referred to as 'the Scheme'), in support of the Development Consent Order (DCO) application. This report informs the assessment included in the Preliminary Environmental Information Report (PEI Report). In accordance with Advice Note 18 published by the Planning Inspectorate, this assessment takes a stepwise approach consisting of three phases: screening, scoping and detailed impact assessment.
2. The WFD Screening process identifies WFD water bodies which may be impacted by the Scheme, where a potential impact pathway to a water body is identified, and the potential zone of influence of the impact. The Scoping stage completes an initial assessment to identify risks from the Scheme to receptors (within the zone of influence) based on relevant water bodies and their WFD elements. In addition to this, the Scoping process identifies water bodies where a more detailed impact assessment is required – only those WFD elements identified at being at risk are carried forward.
3. The purpose of the Scheme is to address the problems of safety, capacity and congestion and improve reliability along the A27 in the vicinity of Arundel. The Scheme seeks to address these problems through construction of approximately a new 8 km (five mile) two-lane, all-purpose, dual carriageway between the existing Crossbush roundabout and east of the existing Fontwell (east) roundabout, to be known as the A27 (referred to as the 'new dual carriageway'), and in addition, approximately 900 m (0.6 miles) of tie-in works will be provided.
4. A full description of the Scheme is provided in *Chapter 2: The Scheme* of the PEI Report. The Scheme includes the following components:
  - a. The new dual carriageway will tie-in to the existing A27 dual carriageway to the east of the existing Fontwell (east) roundabout.
  - b. At the western end of the Scheme direct access onto the A27 from Copse Lane, and private premises, will be closed. A new local road will provide an alternative route.
  - c. Tye Lane will be severed by the new dual carriageway. A new bridge and westbound on-slip road will allow traffic from the existing A27 to join the new dual carriageway via Tye Lane, north of the new dual carriageway. South of the new dual carriageway, Tye Lane will be become a no-through road.

- d. Binsted Lane and Tortington Lane will be severed by the new dual carriageway. New local roads, including bridges, will provide alternative routes.
- e. At the eastern end of the Scheme, the existing Crossbush roundabout will be removed and a new grade separated, all movements, junction will be constructed.
- f. The new dual carriageway will tie-in to the existing A27 dual carriageway to the east of the new Crossbush roundabout.
- g. The existing single-carriageway stretch of the A27, between the existing Crossbush roundabout and east of the existing Fontwell (east) roundabout, will be de-trunked and retained for local traffic and public transport, with maintenance responsibility transferred to the local highway authority.
- h. New crossings will be provided at Yapton Lane, Binsted Rife, Binsted Lane, Tortington Rife, Tortington Lane, Ford Road, the River Arun, and floodplain, and the Arun Valley railway line.
- i. Safer routes for walkers, cyclists and horse riders will be provided as well as improved connections between the South Downs National Park and the surrounding communities and countryside to the south of the Scheme.

### **Study area and WFD water bodies**

5. The study area, which was defined by assessing the potential impact radius of the Scheme, identifying which WFD water bodies interacted with the proposed road alignment, and using expert judgement to identify a zone of influence, is located to the west and south of Arundel and incorporates a number of watercourses that will be crossed by the Scheme; this includes the watercourses identified as part of the Source Pathway Receptor approach within chapter 13 of the Preliminary Environmental Information Report (PEIR). The westernmost extent of the Scheme crosses a tributary of the Lidsey Rife, watercourse LID-AQ101, which sits within the Lidsey Rife (GB107041012010) WFD waterbody. To the immediate east of this, the road alignment crosses Binsted Rife followed by Tortington Rife. These watercourses do not sit within a WFD water body, therefore, no WFD classification, status or objectives are available for these potentially affected watercourses.
6. Further to the east, the road alignment crosses the main River Arun and its floodplain. The floodplain and its complex arrangement of watercourses similarly do not sit within a WFD waterbody. The main River Arun channel comprises the ARUN (GB540704105000) WFD transitional water body.
7. The extent of WFD water bodies considered in the assessment is shown in Plate 13-A-1.



**Plate 13-A-1 WFD water bodies, surface water features and designated sites. The majority of the Scheme sits within an unclassified water body**

## Introduction to the Water Framework Directive

8. The WFD, EC Directive 2000/60/EC, aims to protect and enhance the quality of the water environment across all European Union (EU) member states. The WFD was transposed in England by the Water Environment (Water Framework) (England and Wales) Regulations 2017. Following departure of the UK from the EU, these regulations continue to apply until they are revoked or superseded by new legislation
9. The WFD takes a holistic approach to sustainable management of the water environment by considering interactions between surface water, groundwater and water-dependent ecosystems. Ecosystem conditions are evaluated according to interactions between classes of biological, chemical, physico-chemical and hydromorphological elements known as 'Quality Elements'.
10. Under the WFD, 'water bodies' are the basic management units, defined as all or part of a river system or aquifer. Water bodies form part of a larger 'river basin district' (RBD), for which 'River Basin Management Plans' (RBMPs) are used to summarise baseline conditions and set broad improvement objectives. The WFD requires water bodies to be classified according to their current condition (i.e. Status or Potential) and that objectives are therefore set to either maintain or reach the status.
11. RBMPs are produced every six years, in accordance with the river basin management planning cycle. The current RBMPs at the date of this assessment are the 2015 Cycle 2 plans, which are due to be updated to Cycle 3 plans early in 2022.
12. In England, the Environment Agency (EA) is the competent authority for implementing the WFD, working in partnership with other relevant public bodies and private organisations, for example local planning authorities, water companies, rivers trusts, and private landowners and developers to deliver the objectives of the WFD regulations.
13. The EA is also responsible for managing flood risk and other activities on Main Rivers. Local planning authorities or drainage boards are responsible for consenting certain activities on Ordinary Watercourses. Local planning authorities are responsible for highways drains. Landowners are responsible for ditches and watercourses and also piped watercourses and culverts. While the EA is ultimately responsible for the WFD on any water body, local authorities are required to plan and consent WFD related activities on Ordinary Watercourses.
14. As part of its regulatory and statutory consultee role on planning applications and environmental permitting (under the *Environmental Permitting Regulations (England and Wales) 2016*), the EA and WFD-partnering organisations, must consider whether proposals for new developments have the potential to:

- a. Cause a deterioration of any quality element of a water body from its current status or potential; and/ or
  - b. Prevent future attainment of good status or potential where not already achieved.
15. Regulation 17 of the *Water Environment Regulations 2017* (i.e. the WFD) states that, like other public bodies, determining authorities have a statutory duty to “have regard to the River Basin Management Plan” and “any supplementary plans” covering proposed activities when exercising its functions. Determining authorities must therefore reflect water body improvement priorities as outlined in RBMPs.
16. In determining whether a development is compliant or non-compliant with the WFD objectives for a water body, the EA and partnering organisations must also consider the conservation objectives of any Protected Areas (i.e. Natura 2000 sites or water dependent Sites of Special Scientific Interest (SSSI)) and adjacent WFD water bodies, where relevant.

### Methodology

17. There are no fixed methods for WFD assessment. The nature of the water environment and the breadth of the legislation mean that assessments are tailored to proposals on a case-by-case basis. The following general guidance is available which has been applied for this WFD assessment for the Scheme:
- a. Environment Agency (2016a). *Water Framework Directive risk assessment. How to assess the risk of your activity.*
  - b. Environment Agency (2016b). *Protecting and improving the water environment. Water Framework Directive compliance of physical works in rivers.*
  - c. The Planning Inspectorate (2017). *Advice Note Eighteen: The Water Framework Directive.*
18. A stepwise approach consisting of screening, scoping and impact assessment phases is generally followed in order to:
- a. Rationalise the levels of WFD assessment and impact mitigation that are required.
  - b. Verify that proposals meet the requirements of the WFD.
19. The general approach is described by The Planning Inspectorate (2017) and is summarised below.

### Stage 1: Screening

20. Screening identifies the zone of influence of the Scheme, and if proposed activities pose a risk to the water environment. It is used to identify if there are activities that do not require further consideration for WFD objectives, and therefore can be screened out. For example, activities which have

been ongoing since before the current RBMP plan cycle and which have thus formed part of the baseline.

### **Stage 2: Scoping**

21. The scoping stage involves undertaking an initial assessment to identify risks from the Scheme to receptors (within the zone of influence) based on relevant water bodies and their WFD elements. In addition to this, water bodies where a more detailed impact assessment is required should be identified.

### **Stage 3: Impact assessment**

22. This stage involves rationalised assessment of water bodies and quality elements that could be affected by the Scheme, in order to identify any areas of WFD non-compliance. Proposed activities are reviewed in terms of both positive and negative impacts, and baseline mitigation measures, enhancements, and contributions to the WFD objectives described in the RBMP. Any proposed activities with potentially deleterious impacts on WFD receptors (fish, invertebrates, water quality, designated sites etc.) are reviewed simultaneously with their corresponding mitigation proposals, to determine a net effect on WFD objectives. This report does not include a full WFD impact assessment, covering the screening and scoping phases only. The full impact assessment will be undertaken and reported as an appendix to the Environmental Statement (ES).

### **Mitigation commitments**

23. Proposed mitigation activities relied upon to demonstrate WFD compliance at any of the stages referred to above must be appropriately defined and sufficiently secured. WFD mitigation for the Scheme should be secured through the DCO.

### **Article 4.7 derogation**

24. Where the potential for deterioration of water bodies is identified, and it is not possible to mitigate the impacts to a level where deterioration can be avoided, additional assessment is needed in the context of WFD Article 4.7, which covers procedures for WFD derogation.
25. Article 4.7 is a 'last resort' planning and legal process, and it is a matter for the Secretary of State to consider whether derogation under Article 4.7 is justified. An applicant would be required to provide detailed and often complex evidence to justify its case that the following four stringent tests have been met:
  - a. Test (a): All practicable steps are to be taken to mitigate the adverse impacts on the water body concerned.
  - b. Test (b): The reasons for modifications or alterations are specifically set out and explained in the RBMP and the objectives are reviewed every six years.

- c. Test (c)(1): There is an overriding public interest in the Scheme and/or Test (c)(2): its benefits outweigh the benefits of the WFD objectives (i.e. that the benefits of the Scheme to human health, human safety or sustainable development outweigh the benefits of achieving the WFD objectives).
  - d. Test (d): The benefits of the Scheme cannot be achieved by a significantly better environmental option (that are technically feasible and do not lead to disproportionate cost).
26. In addition, the Scheme must not permanently exclude or compromise achievement of the WFD objectives in other bodies of water within the same RBD and must be consistent with the implementation of other environmental legislation (Article 4.8). In applying Article 4.7, steps must also be taken to make sure that the new provisions guarantee at least the same level of protection as the existing legislation (Article 4.9).
27. This report comprises the screening and scoping stages as detailed above, identifies requirements (if any) for WFD impact mitigation commitments in the DCO submission, and identifies requirements for further WFD impact assessment at future Scheme design stages which will be detailed in the ES.
28. The Scheme is not expected to initiate Article 4.7 derogation. The reason for this is two-fold: firstly, the Scheme is not expected to have permanent operational impacts on receptor water bodies' WFD status; and secondly, there is adequate opportunity to incorporate mitigation into the design of the Scheme to mitigate any residual impacts. Indeed, there are opportunities to provide some degree of betterment, given that, currently, the receptor watercourses exhibit relatively low ecological value.

### **Desk study**

29. A desk-based study was carried out to capture information pertaining to the Scheme that is not attainable through site survey but would support the understanding of the baseline conditions. Review of relevant information relating to the study area was undertaken to develop a baseline for WFD catchments, watercourses and surrounding areas. The following data sources were used for the desk study:
- a. Contemporary Ordnance Survey (OS) maps
  - b. Geology and soil data
  - c. Aerial photography
  - d. EA WFD data
  - e. Historical maps
  - f. Designated areas
  - g. Hydrological information

## Field surveys

### Hydromorphology walkover survey

30. Qualitative hydromorphology walkover surveys were conducted in April and June 2021 to establish baseline conditions of watercourses local to the Scheme. The surveys followed 'fluvial audit' principles (Sear et al., 1995), and focussed on aspects such as valley form, river type, substrate characteristics, bank material, and erosional and depositional processes. These observations were then considered within the context of the WFD to establish the baseline for each of the hydromorphological quality elements.

### Aquatic ecology surveys

#### *Macroinvertebrate sampling*

31. Spring aquatic macroinvertebrate surveys were conducted between 23-25th March 2021, with repeat surveys at each waterbody planned during as the Scheme design progresses. Samples were collected using a standard Freshwater Biological Association (FBA) pattern pond net (mesh size: 1 mm) in line with best practice EA methodology. The in-channel habitats were 'kick sampled' where practicable, or 'sweep sampled', for three minutes followed by a one-minute hand search of larger substrates.
32. The data provided allows characterisation of the invertebrate communities and enables the biological quality of freshwater habitats and Invasive Non-Native Species (INNS) to be characterised. The invertebrate data will be analysed to produce Whalley Hawkes Paisley Trigg (WHPT)/ Biological Monitoring Working Party (BMWP) scores. Average Score Per Taxon (ASPT) values and Community Conservation Indices (The Proportion of Sediment-sensitive Invertebrates (PSI) and Lotic-invertebrate Index for Flow Evaluation (LIFE) indices will also be calculated and interpreted).

#### *Fish surveys*

33. Fish surveys will be undertaken using electric fishing techniques appropriate to the size of the watercourse, following EA best practice guidance.

#### *Macrophyte surveys*

34. Aquatic macrophyte surveys will be undertaken in watercourses and ditches following guidance presented in the U.K. Technical Advisory Group (UKTAG) River Assessment Method (Macrophytes and Phytobenthos). Surveying in lakes will follow guidance set out in the UKTAG Lake Assessment Method (Macrophytes and Phytobenthos – Macrophytes).

#### *Pond and Canal PSYM*

35. Standing water bodies (ponds and canals) identified will be surveyed where access is available. This comprises surveying ponds, canals and

lakes following guidance published by the Freshwater Habitats Trust guide to monitoring the ecological quality of ponds and canals using the Predictive System of Multimetrics (PSYM).

*River Condition Assessment*

- 36. River Condition Assessment surveys will be undertaken. River habitats will be assigned a habitat category and distinctiveness using a combination of *The Natural Environment and Rural Communities Section 41* (Natural England, 2006), Priority Habitat descriptions and River Naturalness Assessment class scores (Natural England, 2019b).
- 37. To assess the condition of watercourses, Modular River Surveys (MoRPh surveys) will be undertaken in line with Natural England Guidance. The survey will utilise the *MoRPh5 survey methodology* (Gurnell et al., 2019; 2020), which assesses watercourse condition based on its morphological features. Habitat classification, length measurement values and condition data will then be entered into the metric to determine the baseline biodiversity units for river habitats within the Scheme’s boundary.

**Groundwater**

- 38. Although groundwater data is being collated via the ongoing Ground Investigation (GI) and which will be used to inform the full assessment with respect to groundwater-surface water interactions, no WFD-specific groundwater surveys are scheduled to take place for the purposes of the assessment. This is because no WFD groundwater bodies underlays the site; therefore, no WFD specific groundwater data is required and information to be gathered from the GI will be sufficient.

**Water quality**

- 39. Surface water quality samples will be taken from the Binsted and Tortington Rife at grid references SU 98114 05970 and SU 99578 05099 respectively. These samples are being taken to help understand the baseline conditions of the two watercourses, with the analysis results being used for the Highways England Water Risk Assessment Tool (HEWRAT). The analysis suite for the water quality testing is given in Table 13-A-1.

**Table 13-A-1 Water quality analysis suite**

<b>Determinant</b>	<b>Limit of detection</b>
Total Hardness	1 mg/l
Bicarbonate Alkalinity	1 mg/l
pH	0.01 pH units
Biological Oxygen Demand (BOD)	1 mg/l

Dissolved Organic Carbon	2 mg/l
Dissolved Copper	7 µg/l
Dissolved Zinc	3 µg/l
Dissolved Nickel	2 µg/l
Dissolved Iron	20 µg/l
Dissolved Manganese	2 µg/l
Calcium	0.2 mg/l
Magnesium	0.1 mg/l
Potassium	0.1 mg/l
Sodium	0.1 mg/l
Chloride	0.3 mg/l
Total Phosphorus	5 µg/l
Ortho-Phosphate as PO <sub>4</sub>	0.06 mg/l
Nitrate as NO <sub>3</sub>	0.2 mg/l
Nitrite as NO <sub>2</sub>	0.02 mg/l
Ammoniacal Nitrogen as N	0.03 mg/l
Total Oxidised Nitrogen (TON) as N	0.2 mg/l
Sulphate	0.5 mg/l

40. These samples have been and will be taken during the months of July 2021, August 2021, October 2021, December 2021 and January 2022. During each sample visit, in-situ water quality is recorded using a water quality meter recording electrical conductivity, temperature, reduction–oxidation potential and dissolved oxygen. Existing routine monitoring data, collected by the Environment Agency, is available for the River Arun.

### Limitations and assumptions

41. A number of watercourses that will be crossed by the Scheme do not sit within a WFD water body and, therefore, do not have WFD classifications or objectives assigned to them. This is because “*many of the waterbodies*

*within this sub-catchment are small with many being field drains and not suited to WFD classification.”<sup>1</sup> However, allowing these watercourses (namely, Binsted and Tortington Rifes, and the many channels that occupy the Arun floodplain) to potentially degrade as a consequence of the Scheme does not comply with the principles of the WFD.*

42. Thus, it is assumed that the standard WFD assessment approach is sufficient for protecting and, where possible, enhancing watercourses that do not fall within a WFD water body. Baseline conditions of the non-WFD watercourses will be established through a range of surveys and monitoring, including; water quality sampling; fish, invertebrate and macrophyte surveys, and hydromorphological appraisal.

### Baseline conditions

#### WFD status

*WFD status – surface water*

43. The water body classification of the Lidsey Rife (GB107041012010) and ARUN (GB540704105000) is provided in Table 13-A-2 and Table 13-A-3 respectively.

**Table 13-A-2 Water body classification of the Lidsey Rife (GB107041012010) WFD Water Body**

WFD parameter	Status/ summary
Water Body ID	GB107041012010
Water Body Name	Lidsey Rife
Water Body Type	Surface
Water Body Area (Ha)	3559.28
Hydromorphological Designation	Not designated artificial or heavily modified
Overall Ecological Status	Poor
Current Overall Status	Poor
Status Objective	Good by 2027
Biological Quality Elements	Poor
Physico-chemical Quality Elements	Good

<sup>1</sup> <https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3266/Summary>

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Hydromorphological Quality Elements	Supports Good
Chemical	Fail

**Table 13-A-3 Water body classification of the ARUN (GB540704105000) WFD Water Body**

<b>WFD parameter</b>	<b>Status/ summary</b>
Water Body ID	GB540704105000
Water Body Name	ARUN
Water Body Type	Transitional
Water Body Area (Ha)	137.85
Hydromorphological Designation	Heavily Modified
Overall Ecological Status	Moderate
Current Overall Status	Moderate
Status Objective	Good by 2027
Biological Quality Elements	High
Physico-chemical Quality Elements	High
Hydromorphological Quality Elements	Supports Good
Chemical	Fail

*WFD status - groundwater*

44. The Scheme interacts with The Sussex Lambeth Group (GB40701G505100) groundwater water body at the westernmost extent of the Scheme. However, the majority of the Scheme does not interact with a WFD-classified groundwater body. Details are provided in Table 13-A-4.

**Table 13-A-4 Classification for the Sussex Lambeth Group (GB40701G505100) Groundwater Body**

<b>WFD parameter</b>	<b>Status/ summary</b>
Water Body ID	GB40701G505100
Water Body Name	Sussex Lambeth Group

WFD parameter	Status/ summary
Water Body Type	Groundwater
Chemical (GW)	Good
Chemical Dependent Surface Water Body Status	Good
Chemical Drinking Water Protected Area	Good
Chemical GWDTEs test	Good
Chemical Saline Intrusion	Good
Chemical Status element	Good
General Chemical Test	Good
Overall Water Body	Good
Prevent and Limit Objective	Active
Quantitative	Good
Quantitative Dependent Surface Water Body Status	Good
Quantitative GWDTEs test	Good
Quantitative Saline Intrusion	Good
Quantitative Status element	Good
Quantitative Water Balance	Good

## Catchment characteristics

### *General characteristics*

45. Land use across the study area is dominated by arable farming, horticulture and improved grassland. There are also small pockets of suburban areas including the village of Walberton towards the south west of the study area and the town of Arundel to the north of the study area. An area of woodland extends southwards from the A27 towards the study area, and is mostly comprised of broadleaved, mixed and yew wood.
46. The topography of the study area is characterised by low lying land, gradually sloping down towards the south coast. Elevations range from between 40 - 50 m above ordnance datum (AOD) near to the existing A27 to approximately 0 m AOD across the Arun floodplain.

### *Catchment geology and soils*

47. Across the majority of the study area the bedrock is clay, with some silts and sands, associated with the London Clay formation. This is bordered by the Lambeth Group, which mostly consists of clay with some silts, sands and gravels. This band of clay, silts and sands is bordered to the north and south by Chalk (BGS, 2021).
48. Across the study area there are areas of river terrace deposits (sand and gravel) and head (gravel sand and clay). Raised beach deposits provide another source of sand and gravel across the study area. Binsted Rife downstream of Binsted and Tortington Rife flow through relatively narrow corridors of alluvium (clay, silt, sand and gravel). Towards the downstream extent of Binsted and Tortington Rifes the alluvium meets raised marine deposits, which comprise gravel (shingle), sand, silt and clay, and are present in a wide band across the Arun floodplain.
49. Catchment soil composition is fairly complex, with different soil types representing changes in land use, underlying geology and tidal influences. Binsted Rife is underlain with free draining, acidic, loamy soils, while Tortington Rife and the Arun Floodplain are underlain with clayey soils with naturally high groundwater reflective of wet, brackish coastal flood meadows (Cranfield University, 2021).

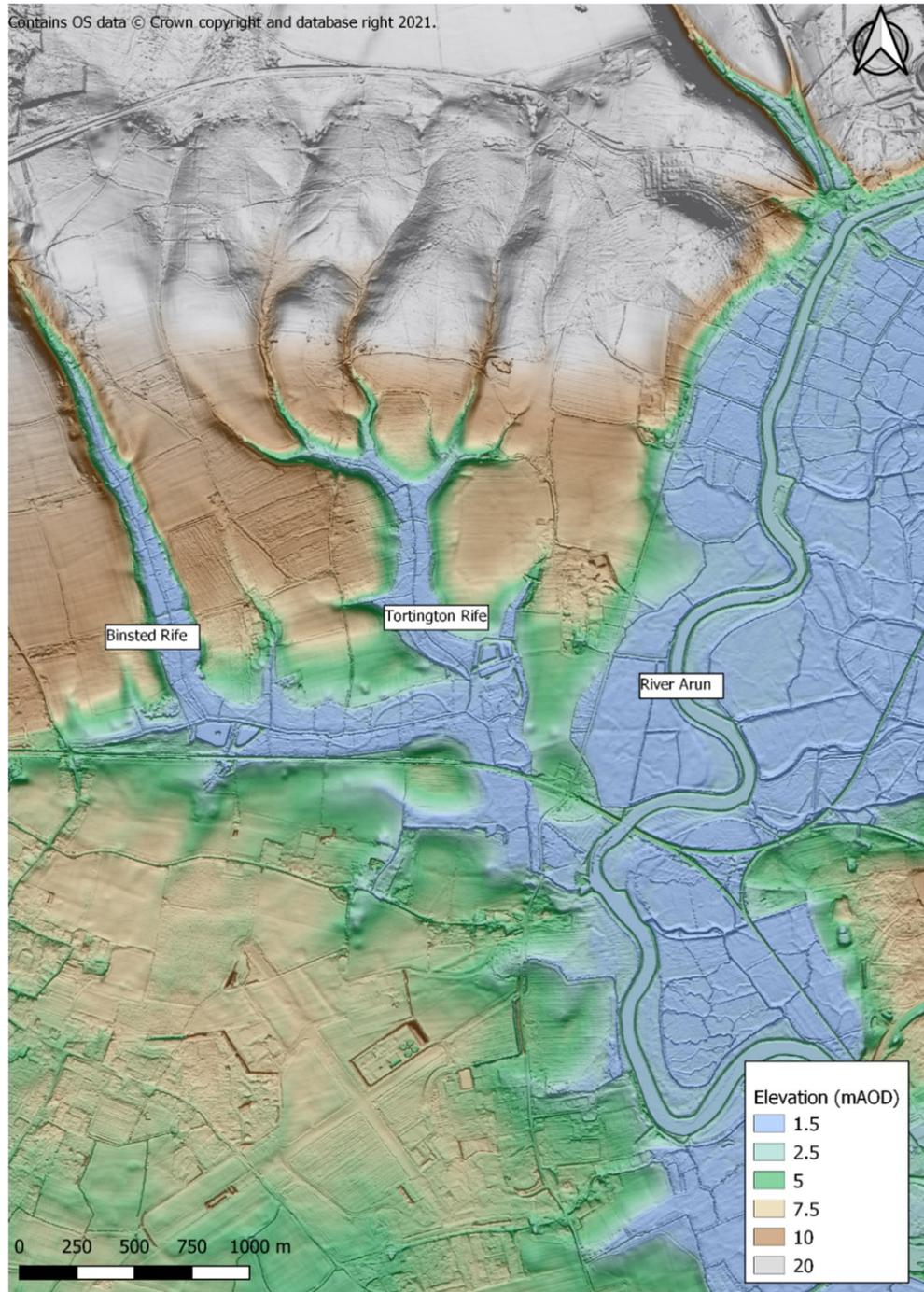
### *Catchment hydrology*

50. The study area receives approximately 750 - 800 mm of rainfall per year (CEH, 2021).
51. The nearest flow gauging station on the River Arun to the study area is approximately 15 km north of Arundel at Pallingham (CEH 2021). This gauge station is likely to be outside of the tidal influence of the River Arun and is unlikely to reflect the hydrology of the River Arun within the study area.
52. At the time of writing flow monitoring of Binsted Rife and Tortington Rife is being carried out to inform a range of assessments, including the WFD assessment. No data are available for the purposes of this assessment; however, they will be analysed and interpreted at the impact assessment stage.

### *Historical channel change*

53. The study area has undergone significant morphological, climatic and hydrological change since the end of the last Ice Age. The River Arun, for example, once represented a relatively small tributary to a much larger river system that occupied the valley floor between England and France, now the English Channel. As ice melted and retreated, periglacial conditions controlled hydromorphological processes, resulting in enlarged melt-water valleys that, today, accommodate watercourses that appear out-of-place.

54. Contemporary channel change can be inferred from historical mapping records. The earliest detailed mapping of the area was published in 1899 (NLS, 2021). This mapping shows the planform of watercourse LID-AQ101 through the study area has not changed since the earliest OS mapping records began. Likewise, the planform of Binsted Rife and Tortington Rife have remained unchanged since 1899. It is likely that human modification of Binsted and Tortington Rifles, which would have likely included straightening and channelisation, occurred prior to the creation of the earliest OS maps.
55. In terms of the River Arun floodplain, historic mapping suggests that the vast majority of drainage channels present around the study area were present in 1899. In some areas it seems that a few of the channels have been filled in since 1899. The planform of the River Arun has not changed since 1899; the historic mapping shows embankments along the river through the study area indicating the extent to which the channel had been subject to anthropogenic modification prior to 1900. Human modification of the lower River Arun dates back to at least the late 1500s, when the channel was dredged and widened in the interest of Arundel's prospects as a commercial port (Environment Agency, 1996).
56. Modern spatial data sources can be used to reveal topographic features in the landscape that often represent former watercourses, the scars of which remain hidden on floodplains. Analysis of open-source LiDAR data suggests that Binsted Rife and Tortington Rife were once tidally influenced, but have transitioned to predominantly fluvially influenced systems as a consequence of significant embanking of the main River Arun for the purposes of flood alleviation and navigation. This is further reinforced by a network of one-way valve structures that prevent ingress of saline water to the rifles, thus allowing the surrounding areas to be used for agriculture. Plate 13-A-2 shows that Binsted Rife and Tortington Rife are at the same elevation as the River Arun floodplain and, therefore, would in the past have been influenced by diurnal tidal processes and saline ingress. In addition, a complex lattice of straight, manmade ditches intertwined with natural sinuous channels is visible in the rendered hill shade map.



**Plate 13-A-2 Rendered hill shade map of open-source LiDAR data. Elevation is exaggerated by a factor of 10 to reveal features.**

## Baseline characteristics of WFD quality elements

### Biological quality elements

#### *Fish*

57. No fish survey data are available for Binsted Rife, Tortington Rife or the River Arun and its floodplain channels due to their exclusion from WFD classification. Such surveys will be conducted for the purposes of establishing baseline conditions for the WFD impact assessment; however, at the time of writing, no survey data are available for the WFD screening and scoping phases; however, seasonal sampling data will be available and set out in the ES.
58. Routine monitoring is, however, conducted on the Lidsey Rife by the EA, data for which is available on the EA's Ecology and Fish Data Explorer tool. A total of 11 species have been recorded in the Lidsey Rife (see Table 13-A-5) of which one, European Eel (*Anguilla Anguilla*) is an Annex II species protected under the Habitats Directive, as well as a priority species under the UK Biodiversity Action Plan (UK BAP).

**Table 13-A-5 Fish species recorded in the Lidsey Rife**

Common name	Latin name
10-spined stickleback	<i>Pungitius pungitius</i>
3-spined stickleback	<i>Gasterosteus aculeatus</i>
Common [wild] carp	<i>Cyprinus carpio</i>
European eel	<i>Anguilla</i>
Feral [brown] goldfish	<i>Carassius auratus</i>
Flounder	<i>Platichthys flesus</i>
Perch	<i>Perca fluviatilis</i>
Pike	<i>Esox lucius</i>
Roach	<i>Rutilus</i>
Roach x rudd hybrid	<i>Rutilus rutilus x Scardinius erythrophthalmus</i>
Rudd	<i>Scardinius erythrophthalmus</i>

#### *Composition and abundance of benthic invertebrate fauna*

59. A total of 93 macroinvertebrate taxa have been recorded in the Lidsey Rife by the Environment Agency between the years 2000 and 2015, two of which are not native to the United Kingdom. These are the invasive

freshwater amphipod *Crangonyx pseudogracilis/floridanus* and the non-native but non-invasive New Zealand mud snail *Potamopyrgus antipodarum*. No protected macroinvertebrate taxa were present.

#### *Composition and abundance of aquatic flora*

60. There are no EA monitoring sites for macrophytes on the Lindsey Rife, however, a total of 19 macrophyte taxa have been identified during the above macroinvertebrate surveys. Two of these are invasive non-native taxa, namely: Nuttall's waterweed *Elodea nuttallii* and Canadian Waterweed *Elodea canadensis*. No protected macrophyte taxa were present.

### **Physico-chemical quality elements**

61. Water quality sampling is being undertaken for the Scheme to establish baseline conditions of unmonitored watercourses for the purposes of the WFD impact assessment, however sampling data will be available and set out in the ES. No other information is available at the time writing for the Binsted Rife, Tortington Rife and Arun floodplain channels.
62. Routine monthly water quality sampling is carried out at Arundel Bridge by the EA, results for which are openly available on the Water Quality Archive.
63. The data indicates that the River Arun at the sampling location is circum-neutral (mean pH 7.91), has moderate electrical conductivity (mean 583  $\mu\text{S}/\text{cm}$ ), and is well oxygenated. Indeed, dissolved oxygen concentration falls within the WFD 'High' category based on the *Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015*.
64. Sanitary pollutants are generally low with ammonia and Biochemical Oxygen Demand (BOD) being within the WFD standard for Good Status. Nitrate is slightly elevated (mean 4.79 mg/l) and may reflect upstream agricultural land use (e.g. fertiliser application). However, orthophosphate (0.026 mg/l) is within the site-specific threshold for 'Good' status.
65. Total suspended solid concentrations are somewhat elevated at 26.98 mg/l on average, reaching up to 53.40 mg/l in peak flows. A total suspended solid concentration of 25 mg/l is typically considered the concentration below which healthy fish populations can be maintained.

### **Hydromorphological quality elements (freshwater bodies)**

#### *Quantity and dynamics of flow*

66. Baseline conditions of watercourse LID-AQ101 will be established at the WFD impact assessment stage.
67. Binsted Rife is understood to originate from the Chalk aquifer beneath the South Downs, and it is likely that baseflow from the chalk contributes to the flow within the Rife, though the volume may become negligible during summer. Flow conditions of the Binsted Rife are characterised by

uniform, slow flow through the lower reach through the golf course. Through the upper reach, flow conditions appear to be more varied, including run-riffle flow biotopes more characteristic of a chalk stream, likely as a result of the closer proximity to the Chalk bedrock rather than the Lambeth Group and London Clay formation.

68. Tortington Rife is unlikely to be fed by Chalk groundwater given the relatively thick layer of Lambeth Group, which is clayey, underlying the water body. Flow conditions have been observed to be extremely uniform and characterised by pooled flow and slow flow velocity.

*Connection to groundwater bodies*

69. Groundwater baseline conditions associated with watercourse LID-AQ101 will be established at the WFD impact assessment stage.

70. Binsted Rife is likely to have particularly good connectivity with groundwater through the reaches underlain by Chalk Bedrock. The channel is not particularly over-deep which should support a good groundwater level. Whilst some culverts at roads and access points are present through the water body, the remaining lengths of the rife are understood to have a natural bed, so barriers to connectivity with groundwater are minimal.

71. Tortington Rife through the study area is observed to be over-deep which may encourage a slightly lower water table through this area. The channel bed is not observed to be artificial, and whilst it is likely some culverts are present through the water body, OS mapping does not show any significant lengths of culverted channel and therefore the rife is likely to support relatively good groundwater connectivity.

*River continuity*

72. Baseline river continuity conditions of watercourse LID-AQ101 will be established at the WFD impact assessment stage.

73. Culverts are present on Binsted Rife which may limit longitudinal connectivity in terms of ecology and sediment. Lateral connectivity of the channel with the floodplain may be slightly limited as the channel appears moderately over-deep through the golf course where it is likely to have been historically channelised.

74. No significant barriers to longitudinal connectivity have been observed on the Tortington Rife through the study area. It is possible that some of the access crossings elsewhere on the waterbody are culverts rather than more open structures which may limit sediment and ecological continuity. The lateral connectivity of Tortington Rife is limited as a result of the over-deep nature of the channel, where it is assumed to have been historically channelised.

75. Some rushes have been observed over the right bank floodplain of Tortington Rife, indicating potential flood flow routes through the

floodplain. It is possible these features are palaeo channels, indicating a previous channel course through the valley bottom.

*River depth and width variation*

76. Baseline river depth and width conditions of watercourse LID-AQ101 will be established at the WFD impact assessment stage.
77. The channel profile of Binsted Rife is observed to be a uniform and trapezoidal through the golf course. The channel is relatively small, with a bottom width of between 0.5 - 1 m and therefore it is unlikely to support a variety of channel widths.
78. The channel profile of Tortington Rife through the study area is very uniform and straight. Some comparatively small variation in channel profile and wetted habitat are provided by a narrow berm feature at the channel edge, which may provide a good reference for enhancement opportunities.

*Structure and substrate of the river bed*

79. River bed structure and substrate of watercourse LID-AQ101 will be established at the WFD impact assessment stage.
80. The bed substrate of Binsted Rife appears to vary throughout the study area. Reaches more strongly influenced by the predominantly clay bedrock appear to be slow flowing with a bed substrate dominated by silts with no observable morphological features. Elsewhere through the watercourse, a gravel bed characteristic of a chalk stream has been observed with bed forms such as pools and riffles present.
81. The river bed through the study area of Tortington Rife was not visible during site surveys, but is assumed to be predominantly silt given the pooled flow and low velocities observed. Some evidence of poaching of the channel banks by cattle has been observed, which will increase the level of silt delivered to the water body.

*Structure of the riparian zone*

82. Riparian zone baseline conditions of watercourse LID-AQ101 will be established at the WFD impact assessment stage.
83. The riparian vegetation of Binsted Rife is of a simple structure, with scattered trees along the banks. Emergent vegetation such as reeds and grasses are present within the channel where flow rates are subdued. Elsewhere along the water body, the channel is bordered directly by grassy banks with very limited riparian vegetation.
84. For significant lengths of the study area, the riparian zone of Tortington Rife is extremely limited and consists of grassy banks. Sporadic individual trees are present, aside from this the most significant area of riparian vegetation is a continuous single layer of trees along the right bank, for approximately 30 m. These trees provide a wood supply to the channel,

however, given the low flow velocity, they do not appear to influence the channel profile.

### **Hydromorphological quality elements (tidal water body)**

#### *Depth variation*

85. Depth variation in the River Arun is limited by the channel's heavily modified form and history of dredging for the purposes of navigation. The channel is also significantly confined by artificial concrete embankments which maintain a uniform cross-section for a considerable distance and sever the main River Arun channel from its expansive floodplain.

#### *Quantity, structure and substrate of the bed*

86. It was not possible to fully assess the quantity, structure and substrate of the River Arun bed during the walkover survey. However, low tide during the survey afforded a reasonable view of the channel bed, which was noted to comprise predominantly of fine material such silt, mud and sand associated with transitional water bodies.

#### *Structure of the intertidal zone*

87. The large embankments that confine the River Arun channel serve to reduce tidal zonation and create a generally homogenous habitat structure. However, small parcels of intertidal habitat are present where the embankment temporarily widens for approximately 400 m immediately downstream of where the Scheme's proposed viaduct will cross the river.

#### *Freshwater flow*

88. Fresh water ingress to the River Arun local to the proposed site of works is limited by the concrete embankments and sluice and valve structures that maintain land drainage in the surround Arun floodplain. Tidal flow in the River Arun can reach speeds of 6 knots (approximately 3 m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Thus, a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity within the river from the sea to the normal tidal limit is likely to occur.

#### *Wave exposure*

89. The Scheme's proposed crossing point lies approximately 8 km inland from the mouth of the River Arun; therefore, this area is likely to be protected from frequent wave exposure. However, the river is used for navigation and the wave action of passing boats may have exerted a detrimental impact on intertidal habitat through erosion and disturbance to habitat; though, the channel is lined with concrete matting that inhibits habitat development, therefore this impact is likely to be negligible and limited to areas where there are no flood embankments.

## WFD screening and scoping assessment

### WFD screening

90. The purpose of the WFD screening stage is to identify a zone of influence of the Scheme and to determine whether that influence has the potential to adversely impact upon WFD quality element receptors. The screening stage also identifies specific activities of the Scheme that could affect receptor water bodies' WFD status and carries them forward to subsequent stages of the assessment process. WFD receptors that are screened out are not carried forward, and justification is provided.

#### *Screening of water bodies*

91. The Scheme interacts with a number of water bodies. WFD screening of these water bodies is provided in Table 13-A-6. A number of fluvial watercourses that interact with the Scheme, including Binsted Rife and Tortington Rife are not within a fluvial WFD water body catchment, however this does not exclude them from this assessment because they are still at risk from adverse impacts and the WFD requires measures to protect all water bodies whether they are classified or not. The WFD provides the most robust methodology for assessing potentially adverse impacts; so, while some watercourses do not have objectives assigned to them, the WFD methodology is being followed to ensure they are suitably protected from degradation. Binsted Rife, Tortington Rife and numerous floodplain ditches are within the Unnamed Water Body which for the purposes of this assessment is referred to as the Arun Lower Trac Operational Catchment.

**Table 13-A-6 Screening of water bodies potentially impacted by the Scheme**

Water body (WFD ID)	Screening outcome	Water body type	Justification
Lidsey Rife (GB107041012010)	In	River	The Scheme will involve works to the existing carriageway over the LID-AQ101.
Arun Lower Trac Operational Catchment (N/A)	In	Assumed River	The catchment area is not designated as a WFD water body; however it contains the majority of surface water features that may be affected by the Scheme, including Binsted Rife,

Water body (WFD ID)	Screening outcome	Water body type	Justification
			Tortington Rife, and a number of channels that occupy the River Arun floodplain as well as the ARUN Transitional water body (see next row).
River Arun (GB540704105000)	In	Transitional	The Scheme will cross the waterbody, floodplain, and a number of drainage channels. This may impact WFD quality elements.
Sussex Lambeth Group (GB40701G505100)	In	Groundwater	Earthworks and cuttings will be required to facilitate construction of the Scheme. These may be sufficiently deep to interact with the underlying groundwater body.

*Screening of activities*

92. The Scheme comprises a number of activities that present a potential risk to the WFD water bodies identified above; the screening of water bodies has been discussed and agreed with the EA. Certain activities on or near waterbodies are considered to be low risk by the EA, as summarised in Table 13-A-7. If the Scheme or components of the Scheme meet the criteria in Table 13-A-7 they may be screened out of any further assessment.

**Table 13-A-7 WFD low risk activities (After Environment Agency, 2016a)**

Activity	Type of modification
Low impact maintenance activities (encourage)	Re-pointing (block work structures)
	Void filling ('solid' structures)

Activity	Type of modification
removal of obstructions to fish/eel passage)	Re-positioning (rock or rubble or block work structures)
	Replacing elements (not whole structure)
	Re-facing
	Skimming/ covering/ grit blasting
	Cleaning and/or painting of a structure
Temporary works	Temporary scaffolding to enable bridge re-pointing
	Temporary clear span bridge with abutments set-back from bank top
	Temporary coffer dam (if eel/ fish passage not impeded)
	Temporary flow diversion (if fish/ eel passage not impeded) such as flumes and porta-dams
	Repair works to bridge or culvert which do not extend the structure, reduce the cross-section of the river or affect the banks or bed of the river, or reduce conveyance
	Excavation of trial pits or boreholes in byelaw margin
	Structural investigation works of a bridge/ culvert/ flood defence such as intrusive tests, non-intrusive surveys
Bridges	Permanent clear span bridge, with abutments set-back from bank top
	Bridge deck/ parapet replacement/ repair works
	Replacing road surface on a bridge
Service crossing	Service crossing below the river bed, installed by directional drilling or micro tunnelling if more

Activity	Type of modification
	than 1.5 m below the natural bed line of the river
	Service crossing over a river. This includes those attached to the parapets of a bridge or encapsulated within the bridge's footpath or road
	Replacement, installation or dismantling of service crossing/ high voltage cable over a river
Other structures	Fishing platforms
	Fish/ eel pass on existing structure (where <2% water body length is impacted)
	Cattle drinks
	Mink rafts
	Fencing (if open panel/ chicken wire) in byelaw margin

93. The screening assessment of activities pertaining to the Scheme is presented in Table 13-A-8. These will be developed further for the full impact assessment to be provided in the ES, but provide an overview of the likely arrangement of activities associated with the Scheme suitable for scoping and screening.

**Table 13-A-8 WFD screening of the Scheme’s activities**

Activity	Description	Screening outcome	Justification
<b>Lidsey Rife (GB107041012010) – River (including LID-AQ101)</b>			
Road drainage	Attenuation to be provided either by use (and expansion) of existing soakaways. oversized pipes and/ or new attenuation	In	Untreated road runoff can adversely impact water quality of receptor watercourses by introducing pollutants, excessive nutrients and fine sediment. Potential water quality issues will be assessed following the

Activity	Description	Screening outcome	Justification
	pond before discharge to LID_AQ101 via existing outfall at greenfield runoff rates.		HEWRAT methodology set out in <i>DMRB LA113</i> .
<b>Sussex Lambeth Group (GB40701G505100) – Groundwater</b>			
Earthworks and cuttings	Excavation will be required to facilitate construction of the road alignment.	In	Earth cuttings may be sufficiently deep in places to interact with the underlying aquifer, creating pollution pathways to the receptor groundwater body.
<b>Arun Lower Trac Operational Catchment (N/A) – Assumed River</b>			
Binsted Rife underbridge	Carriageway underbridge: approximately 25 m long, 20 m wide and 6 m high, to maintain flow conveyance. Natural river bed and banks to be retained.	In	The underbridge structure will remove existing riparian habitat through physical removal and vegetation die-back caused by channel shading. This, in turn, could have knock-on impacts on a range of quality element receptors.
Binsted Rife channel diversion	Binsted Rife to be diverted in order to reduce length of underbridge.	In	Diversion of the Binsted Rife is required to reduce the need for a 130 m long underbridge. This activity is included in order to reduce WFD impacts on Binsted Rife by minimising the loss of open watercourse, therefore it may be

Activity	Description	Screening outcome	Justification
			considered as design mitigation. The diversion will be designed to deliver as much WFD mitigation as practicable.
Tortington Rife underbridge	Carriageway underbridge: approximately 25 m long, 26 m wide and 6 m high, to maintain flow conveyance. Natural river bed and banks to be retained.	In	The underbridge structure will remove existing riparian habitat through physical removal and vegetation die-back caused by channel shading. This, in turn, could have knock-on impacts on a range of quality element receptors.
River Arun viaduct	Multi-span viaduct with piers within the River Arun floodplain.	In	The pier structures may have localised impacts on the arrangement of channels that traverse the River Arun floodplain.
Road drainage	Treatment and attenuation to be provided by ponds, swales and oversized pipes.	In	Untreated road runoff can adversely impact water quality of receptor watercourses by introducing pollutants, excessive nutrients and fine sediment. Potential water quality issues will be assessed following the HEWRAT methodology set out in <i>DMRB LA13</i> .

Activity	Description	Screening outcome	Justification
Floodplain storage compensation	Flood attenuation features will be required to mitigate any residual increase in flood risk.	In	Flood attenuation will be implemented outside of Flood Zone 3; however, there may be some interaction with WFD quality element receptors.
Outfall structures	New outfall structures will be required to convey treated road drainage to existing surface watercourses.	In	Outfall structures will lead to a direct loss of riparian habitat. In addition, the effects of hydraulic scour may lead to a localised change in riverbed characteristics, which could have knock-on impacts on other quality element receptors.
Earthworks and cuttings	Excavation of earth will be required to facilitate construction of the Scheme.	In	Excavations could reach, or become close to, the underlying groundwater body and thus provide pollution pathways to the aquifer. In addition, the proposed works could disrupt flow paths, particularly in shallow superficial aquifers, which could affect baseflow.
<b>ARUN (GB540704105000) – Transitional</b>			
River Arun viaduct	Multi-span viaduct with piers in the River Arun floodplain.	Out	Impacts of the River Arun viaduct deck are likely to be negligible given it will be a clear-span structure with no

Activity	Description	Screening outcome	Justification
			piers or abutments affecting the channel.
Road drainage and flood compensation	Treatment and attenuation to be provided by ponds, swales and oversized pipes.	In	Untreated road runoff can adversely impact water quality of receptor watercourses by introducing pollutants, excessive nutrients and fine sediment.

*Screening of Protected Areas*

94. A proportion of The Arundel Park SSSI falls within 2 km of the Scheme. The SSSI is designated for terrestrial invertebrates of rare and notable species; chalk grassland containing several rare species of plant; and a diverse breeding bird community. It is unlikely that the Scheme will impart any perceptible influence on the SSSI due to the negligible effect of the clear-span structure of the proposed River Arun viaduct deck. In addition, the majority of the SSSI sits above the tidal influence of the River Arun and thus cannot be impacted. Therefore, this is screened out of this assessment.
95. The River Arun is designated as a Drinking Water Protected Area (Surface Water). A number of potential water quality risks have been identified as associated with the Scheme which have implications for drinking water resources; however, these risks, if confirmed, will be eliminated or reduced through appropriate mitigation. Therefore, this is screened out of this assessment.
96. The Arun Valley Special Area of Conservation (SAC) is located approximately 13 km upstream of the proposed Arun Viaduct crossing point. Concerns had been raised by Natural England that the proposed Arun Viaduct will influence the saline wedge and the extent to which it reaches upstream.
97. The tidal flow in the River Arun can reach speeds of 6 knots (approximately 3 m/s) under normal tidal conditions, resulting in visible turbulence along the banks and where it passes through bridges. As an estuary it is thus well mixed, and stratification will not occur. Therefore a classic saline wedge where fresh water sits on top of saline water will not occur. However, a gradation in salinity from the sea to the normal tidal limit is likely to occur. In addition, the proposed viaduct will have negligible influence on the tidal regime of the River Arun locally; therefore, it is very unlikely that the Arun Valley SAC will be adversely impacted by

the proposed structure. Therefore, this is screened out of this assessment.

**WFD scoping**

- 98. The WFD scoping stage defines the level of detail required for further WFD assessment. This includes identifying risks to the WFD receptors from the Scheme’s activities.
- 99. The scoping stage assessment is presented in Table 13-A-9 for surface water bodies; and Table 13-A-10 for transitional water bodies. Groundwater is scoped in for assessment as a precautionary measure; however, no significant risks to the WFD groundwater status are anticipated, nor is the Scheme expected to impede its objectives because the groundwater body does not cover the extent of the Scheme.

**Table 13-A-9 WFD scoping of the Scheme’s activities against surface water body WFD quality elements**

WFD quality element	Key risks	Scoping outcome
<b>Biological Quality Elements</b>		
Fish	A number of activities of the Scheme may present a risk to aquatic ecology receptors. Channel shading, adverse water quality and fine sediment ingress, for example, could disrupt complex feedback mechanisms that support aquatic fauna and flora, thus affecting WFD quality element status.	In
Invertebrates		
Macrophytes and phytobenthos combined		
<b>Physicochemical Quality Elements</b>		
Thermal conditions	Increased traffic may provide a significant source of pollutants, such as oils, silts, and salts, to local watercourse and groundwater bodies. Whilst water quality risks will be assessed by the HEWRAT, physico-chemical quality element receptors are scoped in for further assessment to ensure impacts are sufficiently neutralised.	In
Oxygenation conditions		
Salinity		
Acidification status		
Nutrient conditions		

WFD quality element	Key risks	Scoping outcome
<b>Hydromorphology Quality Elements</b>		
Quantity and dynamics of water flow	Whilst the surface watercourses presented in this assessment are of relatively low hydromorphological value, owing to their significantly modified character, the Scheme presents a potential risk of further degrading the receptor watercourses. Thus, all hydromorphological quality elements are scoped in for further assessment.	In
Connection to groundwater bodies		
River continuity		
River depth and width variation		
Structure and substrate of the river bed		
Structure of the riparian zone		

**Table 13-A-10 WFD scoping of the Scheme’s activities against transitional water body WFD quality elements**

WFD quality element	Key risks	Scoping outcome
<b>Biological Quality Elements</b>		
Benthic invertebrates	The Scheme is not expected to impact upon biological quality elements of the ARUN WFD water body. Potential risks have been ‘designed out’ by incorporating a clear span structure over the main River Arun, with no piers in the channel or abutments within the active channel boundary. Therefore, there is no long-term risk of the Scheme influencing the behaviours of biological receptors, but it will have negligible interaction with the water environment.	Out
Fish		
Phytoplankton		
Macroalgae		
Angiosperms		
<b>Physicochemical Quality Elements</b>		

WFD quality element	Key risks	Scoping outcome
Transparency	Harmful pollutants transported within road runoff may present a risk to physicochemical quality element receptors throughout the operational lifetime of the Scheme; therefore, all physicochemical quality elements are scoped in for further assessment.	In
Thermal conditions		
Oxygenation conditions		
Nutrient conditions		
<b>Hydromorphology Quality Elements</b>		
Depth variation	The Scheme is not expected to impact upon hydromorphology quality elements of the ARUN WFD water body. Potential risks have been 'designed out' by incorporating a clear span structure over the main River Arun, with no piers in the channel or abutments within the active channel boundary. Therefore interactions with physical habitat within the Arun is likely to be negligible.	Out
Quantity, structure and substrate of the bed		
Structure of the inter-tidal zone		
Freshwater flow		

### Mitigation commitments

#### Design mitigation

100. Design mitigation refers to elements of the Scheme that incorporate some design consideration to reduce or eliminate impacts to the water environment. This section is intended to demonstrate how the WFD legislation has been used to influence design of potentially impactful activities.

#### *Binsted Rife crossing*

101. The skew angle of the proposed alignment of the Scheme relative to the Binsted Rife watercourse meant that the underbridge was initially proposed as being a 130 m long culvert/ underbridge structure to convey flow through an embankment. Whilst this was considered the simplest engineering technique of spanning the Binsted Rife valley and maintaining hydraulic conveyance, it was identified as a significant risk to the surface water environment. Consequently, the Binsted Rife crossing was re-designed to include a channel diversion to reduce the skew angle of the road alignment so that the watercourse will pass through the

embankment approximately perpendicular to the road alignment. This will shorten the underbridge length to around 20 to 25 m.

*River Arun viaduct*

102. The River Arun viaduct has been designed to limit impacts on ecological receptors as much as possible. This includes construction of piers, rather than an extensive embankment, to carry the road deck. In addition, the section of road over the River Arun will be clear-span to avoid disruption to habitat and hydrodynamic processes; that is, no piers will be constructed in the channel, and abutments and piers will be set back from the active channel boundary in order to impart as little influence as possible. River crossings designed in this way are considered to be a low-risk activity (see Table 13-A-7).

**Operational mitigation**

103. The exact type, arrangement, location and extent of operational mitigation measures required will be developed and assessed as part of the WFD impact assessment stage and as part of the ES. However, at this stage of the assessment process a range of mitigation has been identified which are appropriate for the characteristics of the surface water features and possible impacts identified in this assessment.
104. Routine operation measures currently included in the Scheme design to mitigate potential operational phase impacts include:
- a. Pollution treatment such as settlement which will be provided via the attenuation storage incorporated into the drainage design where discharge of Scheme drainage will be to watercourses.
  - b. Maintenance of drainage features to be undertaken in line with an operational management plan that will include training of personnel, frequency of inspections, maintenance and replacement of drainage systems.
  - c. Land drainage features required for the Scheme cuttings and embankments will be designed in such a way to ensure no loss of habitat or flood conveyance, and where practicable to enhance biodiversity, and geomorphology.
  - d. Any discharge of drained groundwater from cuttings will be balanced alongside drainage from the road, and attenuated before discharge to surface water.
105. WFD mitigation concepts (Table 13-A-11) have also been considered and will be further developed as required as part of the full assessment completed and reported in the ES.

**Table 13-A-11 WFD mitigation concepts**

<b>Mitigation concept feature</b>	<b>Description</b>
Floodplain habitat creation	Floodplain habitat creation can deliver multiple benefits with relatively little effort and expenditure. The Tortington Rife floodplain is particularly degraded in terms of habitat; however, there are opportunities across water body catchments identified within this scoping and screening assessment. Floodplain habitat may be delivered through features such as floodplain compensation storage and wetland creation; improved connectivity and floodplain scrapes. In most cases, the principal goal of such features is to enhance habitat variability and restore linkages between river channels and their floodplain, and in many cases, improve interactions with groundwater.
Riparian habitat creation	Riparian habitat is a similarly relatively simple yet effective method of enhancing rivers; and works as a multi-beneficial way of neutralising the impacts of engineering. The riparian zone occupies the interface between the aquatic and terrestrial environments; thus, a planting regime of riparian species, appropriate for the geographical location, should be implemented. This will provide habitat for fish and invertebrates; act as a buffer to field runoff; and often improve hydraulic variance within a reach.
Strategic fencing	Controlling livestock access to the watercourse using strategic fencing and dedicated drinking bays will limit excessive bank poaching that currently occurs throughout the study area. This will reduce fine sediment input and potentially lead to improvements in water quality and in-channel habitat and allow recovery of riparian habitat that is presently affected by frequent disturbance by livestock.
In-channel habitat	In channel habitat may be enhanced by a number of techniques. Gravel augmentation, for example, can generate bed variation, which in turn promotes variance of hydraulic biotopes such as riffles and runs, with intervening pools. Inset

Mitigation concept feature	Description
	berms can generate sinuosity, which similarly generate hydraulic variance and habitat complexity, while lowered berms can promote lateral connectivity, thereby creating additional niche habitat.

## Construction impacts and mitigation

### *Potential construction phase risks*

106. During Scheme construction the following adverse impacts may occur:
- a. Impacts on surface water quality due to deposition or spillage of soils, sediments, oils, fuels, or other construction chemicals, or through mobilisation of contamination following disturbance of contaminated ground or groundwater, or through uncontrolled site run-off.
  - b. Potential changes in on-site and off-site flood risk due to changes in the volume, rate and flow of surface water runoff from the construction site, which could mobilise pollutants into water bodies.
  - c. Construction activities such as earthworks, excavations, site preparation, levelling and grading operations result in the disturbance of soils. Exposed soil is more vulnerable to erosion during rainfall events due to loosening and removal of vegetation to bind it, compaction and increased runoff rates. Surface runoff from such areas can contain excessive quantities of fine sediment, which may eventually be transported to watercourses where it can result in adverse impacts on water quality, flora and fauna. Construction works within, along the banks and across watercourses can also be a direct source of fine sediment mobilisation.
  - d. Contamination of surface waters, groundwater and soil could result from leakage and spills of fuels, oils, chemicals and concrete during construction affecting watercourses indirectly via site runoff or directly where works are close to and within a water body. Contamination may reduce water quality and impact aquatic fauna and flora.
  - e. Any construction works that impede on the floodplain have the potential to increase the rate and volume of runoff and increase risk of blockages in watercourses that could lead to flow being impeded, and a potential rise in flood risk. Earthworks may also alter flow pathways and the compaction of the ground and vegetation clearance will also increase the rate and volume of runoff.

### *Construction Mitigation*

107. Scheme construction impacts on water features will be managed using good practice controls to be detailed in the first iteration Environmental Management Plan (EMP).

108. The first iteration EMP will include a Water Management Plan (WMP) as a technical appendix that will provide site specific information of how the risks to the water environment from potential pollution and the risk of physical damage will be mitigated.
109. Scheme construction works will be carried out in accordance with established good practice and the first iteration EMP, which will include information on:
  - a. Permissions and consents.
  - b. Management of construction site runoff.
  - c. Management of construction site spillage risk.
  - d. Management of flood risk.
110. It is anticipated that all WFD construction risks can be adequately mitigated with appropriate planning and management.

### Conclusion

111. This WFD screening and scoping assessment has demonstrated that the Scheme presents potential risks to the Lidsey Rife (GB107041012010), Binsted Rife, Tortington Rife, the River Arun floodplain, and the ARUN (GB540704105000) surface water bodies. In addition, the Scheme may present risks to the WFD status of the Sussex Lambeth Group (GB40701G505100) groundwater body.
112. Consequently, the WFD process is required to move to the impact assessment stage (Stage 3) to confirm these risks and develop mitigation proposals to neutralise them and, where practicable, offer enhancements over and above baseline conditions in line with RBMP objectives.
113. A full WFD compliance assessment report will be produced alongside the Environmental Statement (ES) which will accompany the DCO application.

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