6. Overview of Assessment Process

6.1 Introduction

6.1.1 This chapter outlines the general approach undertaken for the Environmental Impact Assessment (EIA) of the Proposed Scheme. This Stage 3 Environmental Statement (ES) has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB), Volume 5, Section 1, Part 2 'Scheme Assessment Reporting' (TD37/93) (The Highways Agency, et al., 1993) and DMRB Volume 11 'Environmental Assessment'.

6.1.2 The DMRB Stage 3 assessment has built on the assessments undertaken at Stage 2 and been informed through consultation on the Scoping Report and ongoing engagement throughout the design process; see Chapter 7 – Consultation and Scoping.

6.1.3 DMRB Volume 11 'Environmental Assessment' provides guidance on the general principles that apply specifically to EIAs for projects and more detailed topic- specific environmental impact assessment guidance.

6.1.4 Section 3 of DMRB Volume 11 and related Interim Advice Notes (IANs) gives specific guidance on environmental impact assessment methods, forecasting techniques and the levels of design detail and consultations needed for each environmental topic to enable assessment to be undertaken. The topic specific sections also provide guidance on the provision and assessment of mitigation and enhancement measures as well as providing specific clarification on reporting requirements.

6.1.5 Individual topic chapters may refer to additional guidance where relevant. This is clearly set out in each of the chapters where necessary.

6.2 Assessment Topics

6.2.1 DMRB Volume 11 is currently being modernised. At Stage 2 the DMRB Assessment followed the topic structure set out in Table 1.1 in DMRB, Volume 11, Section 1, Part 1 'The Aims and Objectives of Environmental Assessment' (HA200/08) (The Highways Agency, et al., 2008) which was the relevant guidance at the time. This topic structure was reflected in IAN 125/09 'Supplementary Guidance for Users of DMRB Volume 11 'Environmental Assessment' (The Highways Agency, 2009). A new structure for the topic assessments was then proposed in IAN 125/15 'Environmental Assessment Update', Appendix D (Highways England, 2015). This guidance note was published in October 2015 and replaced IAN125/09.

6.2.2 It was agreed with Transport Scotland (TS) that this report would follow the new topic structure proposed in IAN 125/15. Which suggested that previous topics of 'Effects on all Travellers' and 'Community and Private Assets' be combined into one new 'People and Communities' Chapter. However, to provide consistency with the Stage 2 assessment these two chapters have been reported separately under new headings of 'People and Communities – Effects on all Travellers' and 'People and Communities – Community and Private Assets, and Human Health' (taking into account additional requirements of 2017 EIA Regulations as discussed in Paragraph 6.3.1).

Updated DMRB Volume 11 – Environmental Assessment Guidance

6.2.3 Since July 2019 new DMRB guidance has been published and has aligned the assessment process more closely with the 2017 EIA Regulations.

6.2.4 DMRB, Volume 11, Section 1 'Introduction' and Section 2 'General Principles of Environmental Assessment' were updated in July 2019 and now comprises the following:

- Section 1, Part 1 - LA 101 Introduction to environmental assessment;
- Section 2, Part 2 - LA 102 Screening projects for Environmental Impact Assessment;
- Section 2, Part 3 - LA 103 Scoping projects for environmental assessment; and
- Section 2, Part 4 - LA 104 Environmental assessment and monitoring.

6.2.5 LA 101 and LA 104 have been followed within this ES. It should be noted that LA 102 and LA103 were published following the Screening and Scoping stages for this project and therefore have not been followed, for further information see Chapter 7 – Consultation and Scoping.

6.2.6 A review of all new published guidance within Section 3 'Environmental Assessment Techniques' has been undertaken and dependent on publication date some of the assessment chapters have followed the new DMRB guidance.

6.2.7 Table 6-1 'Assessment Chapters Updated to Reflect New DMRB Guidance' details which chapters have been updated and have followed the new Section 3 guidance documents:

Table 6-1 Assessment Chapters Updated to Reflect New DMRB Guidance

Relevant Chapter	Associated Guidance	Date of Publication
8 – Landscape and Visual	LA 107 Landscape and Visual Effects	30/09/2019
10 – Cultural Heritage	LA 106 Cultural Heritage	30/09/2019
11 – Road Drainage and the Water Environment	LA 113 Road Drainage and the Water Environment	30/08/2019
17 – Materials	LA 110 Materials	30/08/2019

6.2.8 A number of the new guidance documents were published on 31 October 2019 and it was considered that use of these new guidance documents would have resulted in delay to the programme. However, a review has been undertaken of these new guidance documents to ensure that, had they been applied, the assessment results would not have been substantially altered, see Table 6-1 'Assessment Chapters Reviewed in the Context of New DRMB Guidance'.

Table 6-2 Assessment Chapters Reviewed in the Context of New DMRB Guidance

Relevant Chapter	Associated Guidance	Date of Publication
14 – People and Communities: Effects on All Travellers	LA 112 Population and Human Health	31/10/2019
15 – People and Communities: Community and Private Assets, and Human Health		
16 – Geology and Soils	LA 109 Geology and Soils	31/10/2019
18 – Climate Change	LA 114 Climate	31/10/2019

6.2.9 Table 6-2 'Assessment Chapters Reviewed in the Context of New DRMB Guidance' highlights those chapters for which the new guidance has therefore not been followed but where a review has been undertaken to ensure that the application of the new guidance would not substantially alter the assessment results:

6.2.10 For clarity, the assessment topics for this ES are detailed below in Table 6-3 'Main Report Structure and DMRB Guidance' along with details of the DMRB guidance followed within the assessments.

Table 6-3 Main Report Structure and DMRB Guidance

Chapter Structure	DMRB Guidance Followed
Chapter 8 – Landscape and Visual Effects	LA107 Landscape and Visual Effects
Chapter 9 – Nature Conservation	Volume 11, Section 3, Part 4 'Ecology and Nature Conservation'
Chapter 10 – Cultural Heritage	LA106 Cultural Heritage Assessment
Chapter 11 – Road Drainage and the Water Environment	LA113 Road Drainage and the Water Environment
Chapter 12 – Noise and Vibration	Volume 11, Section 3, Part 7 'Noise and Vibration' (HA 213/11)
Chapter 13 – Air Quality	Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07)
Chapter 14 – People and Communities - Effects on All Travellers	Volume 11, Section 3, Part 8 'Pedestrians, Equestrians and Community Effects' Volume 11, Section 3, Part 9 'Vehicle Travellers'
Chapter 15 – People and Communities– Community and Private Assets, and Human Health	Volume 11, Section 3, Part 8 'Pedestrians, Equestrians and Community Effects' Volume 11, Section 3, Part 6 'Land Use'
Chapter 16 – Geology and Soils	Volume 11, Section 3, Part 11 'Geology and Soils'
Chapter 17 – Material Assets and Waste	LA110 Material Assets and Waste
Chapter 18 – Climate Change	No DMRB guidance available at the time of assessment.
Chapter 19 – Cumulative Assessment	LA104 Environmental Assessment and Monitoring
Chapter 20 – Schedule of Environmental Commitments	LA104 Environmental Assessment and Monitoring
Chapter 21 – Summary of Significant Residual Effects	LA104 Environmental Assessment and Monitoring

6.2.11 LA 101 Introduction to environmental assessment explains that simple or detailed assessments may be required whereas previously DMRB followed Stage 1, 2 and 3 assessment stages.

6.2.12 It should be noted that DMRB guidance updates no longer refer specifically to Stage 1, 2 and 3 assessment stages, instead using 'simple' and 'detailed' assessment stages. However, for the purposes of consistency and clarity, this ES refers to 'DMRB Stage 3 assessment' unless otherwise stated.

6.3 2017 EIA Regulations alignment

The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017

6.3.1 As detailed in Chapter 1- Introduction, The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017 (2017 EIA Regulations) (Scottish Parliament, 2017) came into force on 16 May 2017 which was after scoping for the Proposed Scheme was undertaken (April 2017). This Environmental Statement has been prepared under the Roads (Scotland) Act 1984 as amended by the Environmental Impact Assessment (Scotland) Regulations 1999 (as amended) (Scottish Parliament, 1984) as per the transitional arrangements of the 2017 EIA Regulations. However, to reflect best practice and emerging requirements where the 2017 EIA Regulations require new or additional assessments these have been undertaken and reported in this Environmental Statement. A summary of the additional assessments is provided in Table 6-4 'Summary of Additional 2017 EIA Regulation Requirements' below with detail of where these have been addressed within this ES. It should be noted the scoping process was not undertaken again under the 2017 Regulations, but all additional requirements have been included in this ES with the exception of 'Heat and Radiation'. The DMRB LA 104' Environmental Assessment and Monitoring' states that *'Heat and Radiation is unlikely to be relevant to the scope of most motorway and all- purpose trunk road projects'* (Pg. 20) (Highways England, et al., 2019).

Table 6-4 Summary of Additional 2017 EIA Regulation Requirements

EIA 2017 Requirements	Location within this ES
Vulnerability to risks of Major Accidents and/or Disasters	See Section 6.3 of this Chapter and Appendix 6.1
Population and Human Health	Included within Community and Private Assets, and Human Health Chapter
Climate Change	Chapter 18 – Climate Change

Major Accidents and Emergencies

6.3.2 The 2017 EIA Regulations require the EIA to consider the expected effects deriving from the vulnerability of the project to risks, so far as relevant to the project, of major accidents and disasters. An assessment of potential issues associated with major accidents and disasters is provided in Appendix 6.1 – Screening of Major Accidents and Disasters.

6.3.3 The analysis undertaken indicates that no accidents and disasters need to be taken forward for further environmental assessment, given that all accidents and disasters that could realistically occur are either:

- Already mitigated as far as reasonably practicable, or
- The Scheme would be no more vulnerable than the existing road.

6.3.4 The assessment provided in Appendix 6.1 – Screening of Major Accidents and Disasters concludes that with the mitigation measures included within the scheme design, no significant adverse environmental effects from major accidents and disasters would be expected.

6.4 Environmental Reporting

Study Area

6.4.1 The study area for each of the environmental topic assessments varies depending on DMRB and best practice guidance. The study area is therefore defined separately within each assessment chapter according to the guidance, geographic scope of potential impacts or the information required to assess those impacts and the associated likely significant impacts.

Chapter Structure

6.4.2 Chapters 8-18, as listed above in Table 6-3 'Main Report Structure and DMRB Guidance' follow the structure detailed below. Chapter 19 – Cumulative Assessment has a slightly different structure appropriate to the assessment.

Introduction

6.4.3 Introduces the environmental topic and the issues considered in the assessment chapter.

Approach and Methodology

6.4.4 Describes the methodology that has been used in the assessment of the environmental topic. Unless specified as otherwise, the methodology used is drawn from DMRB Volume 11 'Environmental Assessment'.

Planning Policy Context

6.4.5 Provides an overview of policies relevant to the environmental topic and which have been used to inform the assessment. A summary of all policies documents relevant to the Proposed Scheme is contained in Chapter 2 – Need for the Scheme.

Consultations

6.4.6 Summarises consultations relevant to the assessment topic which have been used to inform the assessment.

Baseline Conditions

6.4.7 Describes the study area used for the topic as well as the baseline information obtained through desk-based reviews of information, consultation and field surveys. The baseline also considers any changes, which have been identified as likely to occur either prior to construction or prior to the operation of the Proposed Scheme.

Potential Impacts

6.4.8 The general approach to assessment is based on the quantitative determination of impact significance from a combination of the sensitivity of the baseline conditions and the magnitude of the impact on the baseline.

6.4.9 The impact assessment involves three steps: assignment of sensitivity, characterisation of impact and determination of significance.

6.4.10 The criterion for arriving at the assessment of environmental effects can be considered in a formulaic manner. In most cases the output of an Environmental Impact Assessment will be to report on the significance of a particular effect.

6.4.11 The EIA Regulations require consideration of the 'likely significant effects' but do not provide a definition of what constitutes a significance effect as this is determined according to the environmental parameter under consideration. DMRB, Volume 11, Section 2, Part 4 'Environmental assessment and monitoring' (LA104) (Highways England, et al., 2019) provides guidance on determining the significance of environment.

6.4.12 Table 6-5 'Sensitivity Criteria' shows the typical descriptors used to assign environmental value/sensitivity.

Table 6-5 Sensitivity Criteria

Sensitivity (Environmental Value)	Typical Descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution
High	High importance and rarity, national scale and limited potential for substitution
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution
Low	Low or medium importance and rarity, local scale
Negligible	Very low importance and rarity, local scale.

Source: Table 3.2N, DMRB LA 104 'Environmental Assessment and Monitoring'

6.4.13 Typical descriptors and criteria which area used to define the magnitude of an impact of a project are listed in Table 6-6 Impact Magnitude Criteria 'Impact Magnitude Criteria' below.

Table 6-6 Impact Magnitude Criteria

Magnitude of Impact		Typical Descriptors
Major	Adverse	Loss of resource and/or quality or resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss or/damage to key characteristics, features or elements.

Magnitude of Impact		Typical Descriptors
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, on (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No Change		No loss or alteration of conditions, features or elements; no observable impact in either direction.

Source: Table 3.4N, DMRB LA 104 'Environmental Assessment and Monitoring'

6.4.14 The five significance categories give rise to eight potential outcomes (see Table 6-7 'Determination of Significance of Effect' below). Applying the formula, the greater the environmental sensitivity or value of the receptor or resource, and the greater the magnitude of impact, the more significant the effect. The consequences of a highly valued environmental resource suffering a major detrimental impact would be a very significant adverse effect.

6.4.15 In some cases, above the significance is shown as being one of two alternatives. In these cases, a single description should be decided upon with reasoned judgement for that level of significance chosen.

Table 6-7 Determination of Significance of Effect

Sensitivity of Receptor	Magnitude of Impact				
	Major	Moderate	Minor	Negligible	No Change
Very High	Very Large	Large/Very Large	Moderate/Large	Slight	Neutral
High	Large/Very Large	Moderate/Large	Slight/Moderate	Slight	Neutral
Medium	Moderate/Large	Moderate	Slight	Neutral/Slight	Neutral
Low	Slight/Moderate	Slight	Neutral/Slight	Neutral/Slight	Neutral
Negligible	Slight	Neutral/Slight	Neutral/Slight	Neutral	Neutral

Source: Table 3.8.1, DMRB LA 104 'Environmental Assessment and Monitoring'

6.4.16 The approach to assigning significance of effect relies on reasoned argument, professional judgement and taking on board the advice and views of appropriate organisations. For some disciplines, predicted effects may be compared with quantitative thresholds and scales in determining significance.

6.4.17 Table 6-8 'Descriptors of Significance of Effect' provides descriptions of the significance categories.

Table 6-8 Descriptors of Significance of Effect

Significance Category	Typical Descriptors
Very Large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors
Slight	Effects at this level are not material in the decision-making process
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Source: Table 3.7, DMRB LA 104 'Environmental Assessment and Monitoring'

6.4.18 The general approach to assessment is based on the determination of the significance of an impact from a combination of the sensitivity or importance of the baseline conditions (i.e. the current site and its environs, including the sensitivity of receptors) and the magnitude of potential impacts. This process is described in the respective environmental chapters, and where alternative approaches were considered more appropriate these are described and justified; such as consideration of ecological impacts taking account of Institute of Ecology and Environmental Management (IEEM) guidance in Chapter 9 - Nature Conservation.

6.4.19 Significant effects typically comprise residual effects that are within the moderate, large or very large categories.

6.4.20 Each topic assessment considered potential direct, indirect, permanent, temporary, beneficial and adverse impacts as relevant to the receptors identified in the baseline sections. Construction and operational impacts are both assessed in this section.

6.4.21 Where cumulative effects have been identified within a topic assessment these are reported here.

6.4.22 It should be noted that the magnitude and significance reported within the 'Potential Impacts' section of each chapter are on the basis of no mitigation.

Mitigation

6.4.23 Given the iterative design development described in Chapter 4 – Iterative Design Development, each chapter recognises that some mitigation measures have been embedded; through design development.

6.4.24 PAN 1/2013: Environmental Impact Assessment (Scottish Government, 2013) presents mitigation as a hierarchy of measures ranging from prevention of environmental impacts by avoidance, to measures to offset any impacts that cannot be remedied. The mitigation hierarchy is summarised in Table 6-9 'Mitigation Hierarchy' below.

Table 6-9 Mitigation Hierarchy

Level of Mitigation	Typical Descriptors
Prevent	To prevent adverse environmental impacts at source (e.g. building design or specification of construction equipment).
Reduce	If adverse impact cannot be prevented; steps taken to secure a reduction of impacts (e.g. minimisation of the cause of the impact at source, abatement on site and abatement at receptor).
Remedy/Offset	When impacts remain that cannot be prevented or reduced, they should be offset by remedial or compensatory action (e.g. provision of environmental improvements, opportunities for access and informal recreation, creation of alternative habitats and prior excavation of archaeological features).

Source: PAN 1/2013: Environmental Impact Assessment

6.4.25 Mitigation considers best practice, legislation, guidance and professional experience. Each environmental chapter contains tabulated measures, and these are collated in a Schedule of Environmental Commitments. General Standard Mitigation measures are denoted by 'SM' with an item number (e.g. SM-1). Mitigation measures proposed within each environmental assessment chapter are denoted by their chapter title and an item number (e.g. CP-1 for the first mitigation measure proposed in Chapter 15 – Community and Private Assets, and Human Health). Standard mitigation measures refer to those which are best practice for all road construction projects and project specific mitigation relate to those which have been developed to respond to the local context of the Proposed Scheme.

6.4.26 The mitigation commitments identified in each chapter are summarised in Chapter 20 – Schedule of Environmental Commitments. The commitments are set out in a table using the headings detailed in Table 6-10 'Schedule of Environmental Commitments Table Layout' below.

Table 6-10 Schedule of Environmental Commitments Table Layout

Mitigation Item	Location/Approximate Chainage	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required	Potential Monitoring Requirements
Each item is given a unique ID number.	Location provided as Chainage or OS NGR reference	Notes when the measure is to be implemented.	Explains what is required.	Provides commentary on the rationale for the mitigation measure.	Details whether further consultation or approval is required before the mitigation measure can be implemented.	Details of monitoring requirements required once the mitigation measure is carried out.

6.4.27 It should be noted that the 'Timing of Measure' identified in the Schedule of Environmental Commitments, refers to the implementation of the mitigation measure and not when any benefits may be realised. For example, tree planting may take some time before the full benefit is delivered but planting would be undertaken during the construction stage.

6.4.28 There are four main phases for timing of mitigation measures:

- Design – entails further design iterations and consultation under a typical Design and Build contract.
- Pre-Construction – to be fulfilled prior to construction commencing and could include for example further ecology surveys or species translocation, advanced vegetation clearance or obtainment of licences or permits.
- Construction – carried out during the construction stage and would include implementation of mitigation 'embedded' into the Proposed Scheme.
- Post Construction/Operation – could entail landscape or other restoration measures as well as ongoing management and maintenance.

Residual Effects

6.4.29 Residual Effect sections within the chapters report the anticipated significance of effects remaining following application of the proposed mitigation identified in the ES.

6.4.30 Each chapter then summarises all construction and operation residual effects identified in a summary table. All significant residual effects are then summarised in Chapter 21 – Summary of Significant Residual Effects.

Compliance with Plans and Policies

6.4.31 The approach used within this DMRB Stage 3 Assessment to assess compliance with policies and plans involves the following:

- describing the existing and, where appropriate, emerging planning policy guidance framework as applicable to the Proposed Scheme;
- describing the existing, and where appropriate, emerging development plan framework as applicable to the Proposed Scheme;
- assessing the likely impacts of the Proposed Scheme on the achievement of the objectives and policies identified; and,
- reporting the likely conflicts or compliance of the Proposed Scheme on key strategic and local planning policy objectives.

Statement of Significance

6.4.32 This section provides a summary of the moderate to large residual effects that should be anticipated considering the mitigation measures described. Impacts identified as being within the moderate, large or very large categories are significant impacts as defined by DMRB in LA104.

Monitoring

6.4.33 Each chapter provides details of any monitoring required to ensure the implementation of mitigation measures and ensure their effectiveness.

References

6.4.34 Relevant reference sources are included at the end of each individual topic chapter.

6.5 Changes to Scheme Design

6.5.1 The assessment carried out in this ES is based on the Proposed Scheme DMRB Stage 3 design as described in Chapter 5 – The Proposed Scheme. As discussed in Chapter 1 – Introduction, any refinements to the design should be subject to environmental review to ensure that the residual effects would not be greater (or significantly different) than those reported in this ES. The findings of any such review should be subject to approval by TS and where necessary opinions should be sought from the statutory bodies.

6.6 References

European Parliament (2014) Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

The Highways Agency, et al. (1993) Design Manual for Roads and Bridges, Volume 5, Section 1, Part 2 'Scheme Assessment Reporting' (TD37/93)

The Highways Agency, et al. (2008) Design Manual for Roads and Bridges, Volume 11, Section 1, Part 1 'The Aims and Objectives of Environmental Assessment' (HA200/08)

The Highways Agency, et al. (2008) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 5 'Assessment and Management of Environmental Effects' (HA205/08)

The Highways Agency (2009) Design Manual for Roads and Bridges, Interim Advice Note (IAN) 125/09 'Supplementary Guidance for Users of DMRB Volume 11 Environmental Assessment'

Highways England, et al. (2019) Design Manual for Roads and Bridges, Volume 11, Section 1, Part 1 'Introduction to environmental assessment' (LA101)

Highways England, et al. (2019) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 2 'Screening projects for Environmental Impact Assessment' (LA102)

Highways England, et al. (2019) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 3 'Scoping projects for environmental assessment' (LA103)

Highways England, et al. (2019) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 4 'Environmental assessment and monitoring' (LA104)

Highways England (2015) Design Manual for Roads and Bridges, Interim Advice Note (IAN) 125/15 'Environmental Assessment Update'

Scottish Government (2013) Planning Advice Note (PAN) 1/2013 'Environmental Impact Assessment'

Scottish Parliament (1984) Roads (Scotland) Act 1984 (as amended by the Environmental Impact Assessment (Scotland) Regulations 1999 and 2006)

Scottish Parliament (2017) The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017