M54 to M6 Link Road

TR010054

Volume 6

6.1 Environmental Statement

Chapter 4 – Environmental Assessment Methodology

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

January 2020

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M54 to M6 Link Road

Development Consent Order 202[ ]

6.1 Environmental Statement

Chapter 4 Environmental Assessment Methodology

Regulation Number	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010054
Application Document Reference	6.1
Author	M54 to M6 Link Road Project Team and Highways England

Version	Date	Status of Version
1	January 2020	DCO Application

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4 Environmental Assessment Methodology

4.1 Environmental scoping

4.1.1 An Environmental Impact Assessment (EIA) Scoping Report was submitted to The Inspectorate on 11 January 2019 (Ref 4.1). The Inspectorate reviewed and consulted on the EIA Scoping Report and published a Scoping Opinion on 21 February 2019 (Ref 4.2). Consultation responses received late by The Inspectorate were published on 20 February 2019.

4.1.2 The Scoping Opinion and the comments from consultees have been considered in undertaking the EIA and in preparing this Environmental Statement (ES). The Scoping Opinion, including late responses are provided in Appendix 4.1. Responses to the Inspectorate's comments on Chapters 1 - 5 of the EIA Scoping Report are provided in Appendix 4.2 [TR010054/APP/6.3]. The technical chapters (Chapter 5 to 15) within this ES provide a tabulated summary of Scoping Opinion comments received from the Inspectorate and the statutory consultees relating to the chapter. Where assessment has been undertaken in accordance with the Scoping Opinion, the relevant ES section is provided; where an alternative approach has been taken, an explanation as to why is provided.

Topics scoped into the EIA

4.1.3 The EIA Scoping Report and the Scoping Opinion identified that the following topics from Volume 11 of the Design Manual for Roads and Bridges (DMRB) (Ref 4.3) should be scoped into the EIA on the basis that construction, operation and maintenance of the Scheme could potentially lead to significant effects on the environment:

- Air quality
- Cultural heritage
- Landscape and visual
- Biodiversity
- Geology and soils
- Material assets and waste
- Noise and vibration
- Population and human health
- Road drainage and the water environment
- Climate
- Assessment of cumulative effects

Decommissioning

4.1.4 The EIA scoping exercise examined whether decommissioning of the Scheme could result in significant environmental effects. It is considered highly unlikely the Scheme would be demolished after its design life as the road is likely to have become an integral part of the local and strategic highway infrastructure. In the unlikely event that the Scheme was demolished this would be part of the relevant

statutory process at the time, including EIA as appropriate. Therefore, Scheme decommissioning has not been considered further within this ES.

Heat and radiation

4.1.5 The EIA Scoping Report (and confirmed by the Scoping Opinion) concluded that heat and radiation were not relevant matters requiring consideration in the EIA given that the form and nature of the Scheme was such that these emissions would not occur. Accordingly, these matters were scoped out and are not considered further in this ES.

Major accidents and emergencies

4.1.6 The EIA Scoping Report (and confirmed by the Scoping Opinion) identified that matters associated with potential major accidents and disasters should consider the vulnerability of the Scheme to risks associated with man-made and naturally occurring events, and the extent to which they could alter the predicted environmental effects of the Scheme. An assessment of potential issues associated with major accidents and disasters is provided in Appendix 4.3 [TR010054/APP/6.3].

4.1.7 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 foreseeably occur are either:

- already mitigated as far as reasonably practicable; or
- the Scheme would be no more vulnerable than the existing road.

4.1.8 The assessment provided in Appendix 4.3 [TR010054/APP/6.3] concludes that with the mitigation measures included within the Scheme design, no significant adverse environmental effects from major accidents and disasters would be expected.

Transboundary effects

4.1.9 Regulation 32 of the EIA Regulations 2017 requires the Secretary of State to consider any likely significant effects on the environment of a European Economic Association (EEA) State. Guidance upon the consideration of transboundary effects is provided in the Inspectorate's Advice Note 12: Transboundary Impacts (Ref 4.4).

4.1.10 Following the undertaking of a preliminary screening exercise, the scoping exercise concluded no potential for significant transboundary effects to occur within the topics identified in the Scoping Report, these being effects that could arise on other EEA States as a result of the Scheme (refer to Appendix 1.2: Transboundary Effects Screening Matrix, within the EIA Scoping Report). This was attributed to factors such as the characteristics of the Scheme, the geographical area within which effects would be confined, and the intervening distance to the nearest EEA State (the Republic of Ireland located approximately 300 km away).

4.1.11 The preliminary screening exercise presented in the EIA Scoping Report has been updated to reflect the final form of the Scheme and the outcomes of the EIA process. The outcomes of the transboundary screening exercise are presented in

Appendix 4.4 [TR010054/APP/6.3] which confirms that the original conclusions remain valid and that the Scheme is not anticipated to generate any potentially significant transboundary effects. Transboundary effects are therefore scoped out of further assessment.

Alterations to the Order limits

4.1.12 The Order limits differ to that presented with the Scoping Report in January 2019. The main changes to the boundary include:

- extension along the M54 corridor to Junction 2, to account for changes to sign faces and foundations to communicate the changes to the road layout for road users;
- extension to include isolated pockets of land for the replacement of existing signs along the M54 and M6;
- extension to include an additional drainage pond and associated access to the north of the M54 between Junctions 1 and 2;
- extension along the M54 corridor to the east of Junction 1 to allow for road marking amendments;
- extension to include Whitgreave's Wood to provide compensation for the loss of ancient woodland in part through the enhancement of an existing area of ancient woodland;
- extension to include the existing A460 between M54 Junction 1 and M6 Junction 11 to allow for reclassification of the old road;
- extension to include roundabout immediately south of M54 Junction 1 on the existing A460;
- reduction at Tower House Farm to exclude areas of hardstanding used by businesses;
- reduction to remove areas within Hilton Park to the east of Lower Pool;
- extension to include the whole field north of Park Road within the Scheme boundary to allow for environmental mitigation;
- reduction in boundary along Hilton Lane to avoid property frontage areas;
- extension to include land within Brookfield Farm to allow diversion of overhead electrical apparatus;
- extension to include watercourse adjacent to Brookfield Farm to allow culverting of watercourse and construction of outfall;
- reduction to remove land and fishing ponds at Brookfield Farm from the Scheme boundary; and
- extension to include land up to the highway boundary along the existing A460 Wolverhampton Road.

4.2 Surveys and predictive techniques and methods

General approach

4.2.1 The principal guidance documents used to assess and report environmental effects in this ES are contained in DMRB Volume 11. The methodologies used for the assessments for individual topics in this ES are based on those set out in the EIA Scoping Report, having regard to the Scoping Opinion (Appendix 4.1 [TR010054/APP/6.3]), feedback on the Preliminary Environmental Information Report (refer to the Consultation Report [TR010054/APP/5.1]), and discussions with relevant statutory bodies, and are described in chapters 5 to 14 in this ES.

4.2.2 In undertaking the EIA, Highways England has applied the key principles, topics, approaches and criteria set out in these documents; however, where appropriate these have been supplemented using guidance contained in the following policy documents, advice notes and best practice guidelines:

- National Policy Statement for National Networks (NPSNN): this sets out the need and government policies for Nationally Significant Infrastructure Projects on the road network in England (Ref 4.5). The EIA approach adopted is in accordance with the NPSNN. In particular, the EIA adheres to the methodology requirements cited within NPSNN Section 5: Generic Impacts. There are a number of general EIA policy requirements within the NPSNN and these are identified in Appendix 1.3 [TR010054/APP/6.3], together with details of where such issues are addressed within this ES.
- National Planning Policy Framework (NPPF): this provides policy guidance on the treatment of environmental impacts and the achievement of good design (Ref 4.6).
- The Planning Inspectorate's Advice Notes: these provide guidance on EIA technical and procedural matters for Nationally Significant Infrastructure Projects (NSIPs) (Ref 4.7 to 4.13).

Study area and Scheme boundary

4.2.3 As stated in Chapter 2: The Scheme, the Order limits include the boundary of the main works (the Scheme boundary) and a number of isolated pockets of land required to update existing highway signs only. Figure 2.8 [TR010054/APP/6.2] illustrates Order limits and Scheme boundary. The study area assessed for the EIA for each environmental topic is described in the relevant topic chapter (Chapters 5 to 15). These study areas are given from the Scheme boundary rather than the Order limits, as the replacement of existing signs would not result in a significant effect on environmental receptors alone or in-combination with the works included in the Scheme boundary.

Existing baseline and future conditions

4.2.4 To identify the effects of the Scheme on the environment, it is important to understand the environment that would be affected by the Scheme ('baseline conditions'). Understanding baseline conditions allows the measurement of changes that would be caused by the Scheme.

4.2.5 Existing baseline environmental conditions have been defined in order to identify the presence of environmental resources and receptors that may be affected by the Scheme within defined study areas in order to determine their relative value, importance or sensitivity towards change.

4.2.6 Resources comprise environmental aspects which support and are essential to natural or human systems. These include areas or elements of population, ecosystems, watercourses, air and climatic factors, landscape, and material assets.

4.2.7 Receptors comprise people (i.e. occupiers of dwellings and users of recreational areas, places of employment and community facilities) and elements within the environment (e.g. flora and fauna) that rely on environmental resources.

4.2.8 Baseline environmental data, information and records were obtained using a combination of sources and techniques, namely:

- Desk study: a study of previously published studies has been undertaken as part of the Scheme including; published literature; databases, records and schedules relating to environmental designations; national and local planning policy documents; historic and current mapping; aerial photography; and data gathered from previous environmental investigations.
- Site-based surveys: these have been undertaken to verify and consolidate information gathered during the desk-based review, and to evaluate the relationships between specific environmental interests and their wider environmental value.
- Consultation: engagement with statutory and non-statutory organisations was undertaken to obtain factual baseline environmental information and records.

4.2.9 Defined baseline environmental conditions are not necessarily the same as those that exist at the current time; they are the conditions that would exist in the absence of the Scheme at:

- the time construction of the Scheme is anticipated to start (preliminary works associated with the Scheme are anticipated to start in Autumn 2021 (subject to securing a Development Consent Order (DCO)) with the main construction works starting in Spring 2022), for construction impacts;
- the time that the Scheme is expected to open to traffic (assumed to be 2024), for operational impacts; and
- fifteen years after Scheme opening, (assumed to be 2039) for impacts arising from the long-term operation of the Scheme (and following maturation of Scheme landscape planting).

4.2.10 The identification of baseline conditions therefore involves predicting changes that are likely to happen in the intervening periods, for reasons unrelated to the Scheme. Definition of future baseline conditions thus entails taking current conditions and potential future development into consideration and using experience and professional judgment to predict what the baseline conditions might look like prior to the start of Scheme construction and during Scheme operation. Details regarding potential future development considered as part of

both the future baseline and the cumulative assessment are discussed within Chapter 15: Assessment of Cumulative Effects and listed within Appendix 15.1 [TR010054/APP/6.3].

4.2.11 Where there are any potential differences in the 2020 and 2024 baseline conditions, this is identified within the 'Future baseline' sub-sections within the 'Baseline' section of each topic chapter (if relevant).

Predictive techniques

4.2.12 To assess the potential environmental effects associated with the construction and operation of the Scheme, a number of predictive techniques have been used, which are summarised below:

Construction phase traffic modelling:

4.2.13 In order to estimate the total number of vehicle movements associated with construction of the Scheme, manual traffic calculations were undertaken to establish the likely number of heavy goods vehicles (HGVs) and light vehicles that would be added to the road network.

4.2.14 The daily one-way movements of construction vehicles were calculated using information provided by the appointed buildability contractor for the Scheme in relation to the phasing of the works, plant and equipment requirements, material quantities, construction compound details, worker numbers, and shift times (see Chapter 2: The Scheme).

4.2.15 The flows of construction vehicles on the road-links of interest were calculated based on a number of assumptions about how the Scheme would be built. These included vehicle occupancy rates, the origins of employees, plant and materials, the time periods over which light vehicle and HGV movements would be distributed, and when the peak construction periods would occur.

4.2.16 Users of the M54 would be impacted by temporary traffic management layouts during the reconstruction of M54 Junction 1. Assumptions were made about how these temporary traffic management arrangements would be implemented and manual adjustments were made to the traffic assignments to represent these traffic management phases.

4.2.17 The calculated flow totals were then used to inform the assessment of construction related effects in the topics of noise and vibration, and air quality.

Operational phase traffic modelling:

4.2.18 A traffic model covering the locality associated with the strategic and local road network was developed to accurately forecast future traffic flows, both with and without the Scheme.

4.2.19 The information generated from the traffic model has been used to:

- establish the minimum engineering requirements of the Scheme;
- inform the assessment of accidents;
- inform the economic appraisal of the Scheme; and

- produce data in a variety of formats to inform the assessments of effects within the topics of air quality, noise and vibration, road drainage and the water environment, climate and population and health.

4.2.20 Traffic forecasts were prepared based on a Local Area Model (LAM) and a Regional Traffic Model (RTM), using a hierarchy of strategic and local traffic information derived from the following sources:

- the Midlands Regional Transport Model (MRTM) – this is a multi-modal transport model;
- the M54-M6 Link Road LAM – this model was developed by taking the Stage 2 local model and refining it by adding additional zones and network to provide a more detailed understanding of traffic movements close to the Scheme;
- operational modelling of individual and/or linked junctions – this involved detailed modelling of specific junctions and slip roads to understand their operational capacity.

4.2.21 Specific development sites (e.g. housing/employment) in the area that could influence future traffic flows on the network were taken account of as part of the demand forecasting process undertaken in 2019. Information relating to the form and status of other development projects in the following administrative areas was obtained for potential inclusion in the traffic model:

- South Staffordshire District Council;
- Wolverhampton City Council;
- Cannock Chase District Council; and
- Walsall Council.

4.2.22 A review was also undertaken of other highway projects identified within the Department for Transport's Road Investment Strategy 2015-2020 (Ref 4.14) to identify other planned schemes on the strategic road network with a relationship to the Scheme.

4.2.23 The other development projects identified from these sources were then categorised to determine the level of confidence attached to their delivery, as follows:

- near certain – meaning the development will happen or there is a high probability that it will happen;
- more than likely – meaning the development is likely to happen but there is some uncertainty;
- reasonably foreseeable – meaning the development may happen but there is significant uncertainty; and
- hypothetical – meaning there is considerable uncertainty as to whether the development will ever happen.

4.2.24 Only those other development projects for which delivery was "near certain" or "more than likely" were subsequently taken forward into the traffic model.

4.2.25 The traffic modelling process calculated the following to be the peak traffic periods:

- AM peak hour 1 – between 07:00 and 08:00;
- AM peak hour 2 – between 08:00 and 09:00;
- AM peak hour 3 – between 09:00 and 10:00;
- Inter-peak average hour – between 10:00 and 16:00;
- PM peak hour 1 – between 16:00 and 17:00;
- PM peak hour 2 – between 17:00 and 18:00;
- PM peak hour 3 – between 18:00 and 19:00;
- Evening – between 19:00 and 22:00; and
- Overnight – between 22:00 and 07:00.

4.2.26 Categories of speeds (termed speed banding) were also calculated on the outputs of the traffic model, the purpose being to provide additional data for use in the air quality and noise and vibration assessments.

4.2.27 Further information regarding the other development projects included within the traffic model and the factors applied during the modelling process is presented within the Transport Assessment Report [TR010054/APP/7.4].

Other computer modelling techniques

4.2.28 Other forms of computer modelling have been undertaken as part of the EIA within the topics of air quality, noise and vibration, and road drainage and the water environment. These have used a combination of traffic data, monitoring data and environmental factors (such as those relating to climate change) to model the conditions that would occur within the different scenarios and years adopted in the assessment of the Scheme. See Appendix 11.4 Noise Modelling Details and Appendix 13.3 Assessment of Road Runoff and Spillage Risk to Watercourses (HEWRAT Assessment) [TR010054/APP/6.3].

Rochdale Envelope parameters and design uncertainty

4.2.29 To provide some flexibility in the design of the Scheme and accommodate minor design adjustments during the detailed design and construction phases of the Scheme, the EIA has adopted a precautionary approach to identifying significant environmental effects. A series of maximum development parameters or 'limits of deviation' have been established and are defined in Chapter 2: The Scheme, Section 2.5. This approach is called the Rochdale Envelope. The Inspectorates Advice Note 9: Rochdale Envelope, provides guidance on the use of the Rochdale Envelope applicable to the EIA process (Ref 4.9).

4.2.30 The Rochdale Envelope is an established principle that allows a project description to be broadly defined within a number of parameters. Its adoption allows meaningful EIA to be undertaken by defining a 'realistic worst case' scenario that decision-makers can consider when determining the acceptability or otherwise of the environmental effects of a development project. The principle is founded on the assumption that as long as the technical and engineering parameters of a project fall within the defined limits of deviation 'the envelope', and the EIA has considered the likely significant effects of that envelope, then flexibility within those parameters is deemed to be permissible within the terms of any consent granted for the project.

4.2.31 The realistic worst case scenario assumes that one or other of the parameters will have a more significant adverse effect than the alternative, and where a range of parameters is provided, the most environmentally detrimental parameter is assessed in the EIA (which can differ depending on the environmental resource or receptor being assessed).

4.3 Potential significant effects and mitigation

Temporal scope

4.3.1 The assessment of effects involves comparing a scenario with the Scheme against one without the Scheme over time. The absence and presence of the Scheme are referred to as the 'Do Minimum' and 'Do Something' scenarios respectively. The 'Do Minimum' scenario represents the future baseline and assumes the current routine highway maintenance regime is followed with no major changes to the existing highway infrastructure.

4.3.2 Depending on the topic, the effects are assessed for the 'Do Minimum' and 'Do Something' scenarios in the baseline year (assumed to be the year of Scheme opening, 2024 for the purposes of the ES) and a future assessment year (assumed to be 15 years after Scheme opening, 2039).

Identifying potential impacts and effects

4.3.3 Impacts comprise the following identifiable changes to baseline environmental conditions:

- Direct impact: such as the loss of an ecological habitat to accommodate the Scheme.
- Indirect impact: such as pollution downstream arising from silt deposition during earthworks.
- Secondary impact: such as changes to ecological species as a result of water pollution.
- Short-term (or temporary) impact: such as dust generated as a result of construction activities.
- Medium-term impact: such as the cutting back of planting which is then allowed to regenerate.
- Long-term (or permanent) impact: such as the introduction of new built form into an established view.

4.3.4 These types of impact have been classified as being either:

- Beneficial (positive): for example, the introduction of planting to screen existing visually detracting elements.
- Adverse (negative): for example, loss of a valuable environmental feature.

4.3.5 Impacts have been defined in accordance with accepted terminology and standardised methodologies to predict the magnitude of impact (or change) resulting from the Scheme, in accordance with DMRB Volume 11.

4.3.6 The impact assessments undertaken have been both quantitative and qualitative in nature, depending on the nature of the topic under consideration and the techniques used to identify and predict the magnitude of impacts (or change). For example, the assessment of noise and vibration has used computer modelling to calculate changes in noise levels resulting from the Scheme, whereas the assessment of visual effects has relied upon the professional experience, perception and opinion of the individual undertaking the assessment; using available information and professional judgement based on knowledge and experience of similar schemes.

Construction and operational impacts

4.3.7 The EIA has considered impacts during the construction and operation of the Scheme. The construction phase assessment addresses both the temporary activities involved in building the Scheme, and the subsequent permanent presence of the Scheme once constructed. Where relevant, temporary and permanent effects are described separately.

4.3.8 The operational assessment considers the situation when the Scheme is being used by traffic.

Assessing significance

4.3.9 This ES addresses the requirements of the EIA Regulations in presenting: "The description of the likely significant effects" of the Scheme on the environment, covering "the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development" (see Schedule 4 paragraph 5 of the EIA Regulations 2017).

4.3.10 The significance of an environmental effect is typically a function of the 'value' or 'sensitivity' of the receptor and the 'magnitude' or 'scale' of the impact (or change).

4.3.11 DMRB Volume 11, Section 2, LA 104 Environmental Assessment and Monitoring (Ref 4.15) provides advice on typical descriptors of environmental value, magnitude of change (or impact) and significance of effects. Table 4.1 to Table 4.4 reproduce these descriptors and explain how the significance of effect category is derived. Assessments against these criteria have been made on the basis of professional judgement.

Table 4.1: Environmental value (sensitivity) and descriptions

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	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Medium or low importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale

Table 4.2: Magnitude of impact and typical descriptors

Magnitude of impact (change)		Typical Descriptors
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	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, one (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 characteristic, 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 characteristics, features or elements; no observable impact in either direction.

4.3.12 Table 4.3 demonstrates how combining the environmental value of the resource or receptor with the magnitude of change (or impact) produced a significance of effect category.

Table 4.3: Significance matrix

Environmental value (sensitivity	Magnitude of impact (degree of change)				
	No change	**Negligible**	**Minor**	**Moderate**	**Major**
Very high	Neutral	Slight	Moderate or large	Large or very large	Very large
High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

4.3.13 The DMRB recognises: "*the approach to assigning significance of effect relies on reasoned argument, the professional judgement of competent experts and using*

effective consultation to ensure the advice and views of relevant stakeholders are taken into account".

4.3.14 The assessment of the significance of environmental effects considers the following factors:

- the receptors/resources (natural and human) which would be affected and the pathways for such effects;
- the geographic importance, sensitivity or value of receptors/resources;
- the duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
- environmental and health standards (e.g. local air quality standards) being threatened; and
- feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

4.3.15 Table 4.4 illustrates how DMRB describes the significance of effect categories. In arriving at the significance of effect, the assessor considers whether effects are direct, indirect, secondary, cumulative, short, medium or long-term, permanent or temporary, beneficial or adverse (refer to paragraph 4.3.3).

Table 4.4: Significance categories and typical descriptions

Significance category	Typical descriptors of effects
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.

4.3.16 Those effects categorised as moderate, large or very large are typically considered to be significant. Slight adverse and neutral effects are not considered to be significant. Slight and moderate effects can be borderline cases and whether these effects are considered to be significant is based on professional judgement.

4.3.17 Where appropriate, topic-specific criteria and approaches have been adopted from institute guidelines or best practice. Not all the environmental topics use the matrix-based approach, for some disciplines, predicted effects may be compared with quantitative thresholds and scales in determining effect significance. Where quantitative measures may not be applied, qualitative criteria derived from DMRB have been utilised. Further topic-specific details of the methodology for determining effect significance are presented in Chapters 5 to 15. Since the submission of the Scoping Report the DMRB environmental standards have been updated. Where

possible these new standards have been utilised in undertaking the EIA. Appendix 4.5 [TR010054/APP/6.3] outlines the changes in scope and methodology since the submission of the Scoping Report in January 2019.

Mitigation measures, enhancement and residual effects

4.3.18 The assessment within this ES has taken into account embedded mitigation (design measures which are integrated into a project for the purpose of minimising environmental effects), as well as essential mitigation (mitigation critical for the delivery of a project which can be acquired through statutory powers) including standard management activities (Ref 4.15). Embedded mitigation measures are outlined in Chapter 2: The Scheme, Section 2.5 with essential mitigation reported in the 'Design, mitigation and enhancement' section of each of the technical chapters. Mitigation measures for the Scheme would be implemented through a Construction Environmental Management Plan (CEMP) and are outlined in the Outline Environmental Management Plan (OEMP) [TR010054/APP/6.11]. Implementation of the OEMP would be secured by a requirement of the DCO. Mitigation measures have been developed in accordance with the mitigation requirements also set out in Section 5 of the NPSNN.

4.3.19 Mitigation measures necessary to address the Scheme's potentially significant adverse environmental effects identified during the EIA process have been identified and included as part of the Scheme design or included in the OEMP. This process has been an iterative part of the Scheme development following the mitigation hierarchy outlined in the DMRB (Ref 4.15), duplicated below:

- **Avoidance and prevention** – incorporation of measures to avoid the effect, for example, alternative design options or modifying the Scheme programme to avoid environmentally sensitive periods.
- **Reduction** – where avoidance is not possible, then mitigation is used to lessen the magnitude or significance of effects, for example, fencing off sensitive areas during construction and implementing a CEMP to reduce the potential impacts from construction activities.
- **Remediation** – where it is not possible to avoid or reduce a significant adverse effect then offsetting measures have been considered, for example the provision of new habitat to replace that lost to the Scheme or remediation such as the clean-up of contaminated soils.

4.3.20 Where possible enhancement measures have been included as part of the Scheme in line with the aims and objectives of the Highways England Licence. Enhancement measures are considered to be over and above any avoidance, reduction and remediation measures required to mitigate the adverse impacts of the Scheme. Enhancement measures are reported in the 'Design, mitigation and enhancement' section of each of the technical chapters.

4.3.21 Each of the individual technical chapters identify the essential mitigation measures required to mitigate any potential significant adverse effects. Essential mitigation is shown on the Environmental Masterplans (Figures 2.1 to 2.7 [TR010054/APP/6.2]) and detailed in Table 3.2, 3.3 and 3.4 of the OEMP [TR010054/APP/6.11].

4.3.22 The effects that remain after mitigation are referred to as residual effects. The identification of the significance of residual effects after mitigation is the key outcome of the ES. Enhancement measures are not factored into the determination of residual significant effects; however, enhancement measures and their associated benefits are still identified within this ES.

4.4 General assessment assumptions and limitations

4.4.1 An acknowledgement and details of any limitations or assumptions adopted for each of the topic specific assessments is provided within each of the technical chapters of this ES (Chapters 5 to 15). These principally relate to:

- The availability and accuracy of third-party data and records to inform the establishment of baseline conditions.
- The availability and reliability of information regarding future planned development projects, for inclusion in the cumulative effects assessment.
- The need to undertake certain ecological surveys at sub-optimal times of the year.
- The availability and reliability of information regarding future planned development projects, for inclusion in the cumulative impact assessment.

4.4.2 In instances where uncertainty exists, a precautionary approach assuming a reasonable worst-case impact has been adopted for the assessment.

4.5 Reporting the assessment

4.5.1 The following common format has been adopted in the reporting of the individual assessments presented within Chapters 5 to 14:

- Introduction – this section introduces the assessment and provides a brief statement regarding the competency, qualifications and experience of the individual responsible for its production;
- Legislative and policy framework – this section summarises relevant legislation and planning policy which has influenced: the assessment methodology followed; the determination of the sensitivity, value and/or importance of resources and receptors; and/or the requirements for mitigation;
- Assessment methodology – this section: summarises the scope of the assessment undertaken; presents the methodologies and criteria applied in the assessment; explains (where relevant) any deviation from the generic assessment methodology presented within this chapter; sets out how the process of consultation has influenced the assessment; and explains the scenarios/timescales considered in the assessment;
- Assessment assumptions and limitations – this section summarises any assumptions applied and/or any limitations encountered in the assessment, in addition to those presented within this chapter;
- Study area – this section sets out the spatial extents of the study area(s) used in the assessment;

- Baseline conditions – this section presents information on the existing (and future) environmental conditions associated with the study area(s);
- Potential impacts – this section presents the potential environmental impacts that are likely to occur as a result of the Scheme, and therefore should be considered within the assessment;
- Design, mitigation and enhancement measures – this section describes the essential mitigation measures relevant to the topic area, including details of any compensation measures that would be implemented to offset environmental impacts. Environmental enhancement measures relevant to the topic are also included in this section;
- Assessment of likely significant effects – this section presents the likely significant effects predicted to occur as a result of the Scheme, taking account of the role that mitigation and compensation measures would have in reducing their significance; and
- Monitoring – this section provides details of the procedures to be implemented post-construction of the Scheme to monitor any significant adverse effects identified in the assessment.

4.5.2 The reporting of the cumulative assessment within Chapter 16: Assessment of Cumulative Effects, has adopted the following format:

- Introduction – this section introduces the assessment and provides a brief statement regarding the competency, qualifications and experience of the individual responsible for its production;
- cumulative assessment methodology – this section details: the scope of the assessment in relation to its spatial and temporal extents; the process by which other development projects have been identified and considered in the assessment; and the methodologies applied to identify combined and cumulative effects;
- assessment assumptions and limitations – this section summarises any assumptions applied and/or any limitations encountered in the assessment;
- assessment of combined effects – this section presents the outcomes of the assessment in relation to effect interactions on environmental resources and receptors;
- assessment of cumulative effects with other development – this section presents the outcomes of the assessment in relation to the cumulative effects of the Scheme and other development projects; and
- monitoring – this section provides details of the procedures to be implemented post-construction of the Scheme to monitor any significant adverse cumulative effects identified as remaining post-mitigation.

4.6 Duplication of assessment

4.6.1 The following assessments and reports have been produced as stand-alone documents to support the DCO application. To avoid duplication these reports have

been cross referenced, and the results summarised in this ES. These reports include:

- Habitat Regulations Assessment (HRA) Screening Report: When preparing applications for NSIPs under the PA 2008, applicants need to consider the potential effects of the application on European Sites. It is a requirement of the Habitats Directive 92/43/EEC that the potential for proposed schemes to impact upon European Sites (also referred to as Natura 2000 sites) is investigated, where such sites are designated for their nature conservation interests. This process is referred to as an HRA. An HRA screening exercise was undertaken for the Scheme before the incorporation of mitigation. The HRA Screening Report in the format of an HRA – No Significant Effects Report (NSER) is provided as DCO application document TR010054/APP/6.9 and concludes that an HRA is not required for the Scheme (refer to Chapter 8: Biodiversity). It is noted that the HRA – NSER has been reviewed by Natural England who confirm that they are satisfied that the Scheme would have no likely significant effect on these sites (refer to Annex D of the HRA – NSER [TR010054/APP/6.9]). It is therefore considered that the Scheme would have no likely significant effects on European Sites.
- Flood Risk Assessment (FRA) Report: An FRA has been undertaken to consider the influence of the Scheme on local flooding and the mitigation measures embedded in the scheme design that would avoid a significant flooding effect. This is provided as Appendix 13.1 [TR010054/APP/6.3].
- Water Framework Directive (WFD) Assessment Report: A WFD assessment has been undertaken and a WFD compliance assessment report provided in Appendix 13.4 [TR010054/APP/6.3]. The reports consider the extent to which the Scheme could impact on the current and future target WFD status of Latherford Brook. Where potential adverse effects are identified, the assessments have informed the mitigation measures incorporated into the Scheme design.
- Arboricultural Impact Assessment: An Arboricultural Impact Assessment has been undertaken to consider the likely direct and indirect impacts of the Scheme on those trees within or immediately adjacent to the Scheme boundary. The report considers the suitable mitigation measures required for the successful retention of significant trees or to compensate for trees to be removed. This is provided in Appendix 7.1 [TR010054/APP/6.3].
- Case for the Scheme: The Case for the Scheme and NPSNN Accordance Table [TR010054/APP/7.2] includes consideration of the Scheme's compliance with planning policy. For example, consideration of the impact on green belt (Chapter 7: Landscape and Visual), ancient woodland (Chapter 8: Biodiversity) and heritage assets (Chapter 6: Cultural Heritage).

4.7 References

Ref 4.1 Highways England (2019) M54-M6/ M6 Toll Link Road: PCF Stage 3 Scoping Report. Available online at: https://infrastructure.planninginspectorate.gov.uk/wp-

content/ipc/uploads/projects/TR010054/TR010054-000025-54M6-Scoping%20Report.pdf

Ref 4.2 The Planning Inspectorate (2019) Scoping Opinion: Proposed M54 to M6/M6 Toll Link Road Scoping response. Available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010054/TR010054-000029-53J6%20-%20Scoping%20Opinion.pdf

Ref 4.3 Highways Agency (1993 onwards) Design Manual for Road and Bridges, Volume 11: Environmental Assessment

Ref 4.4 The Planning Inspectorate (2018) Advice Note 12: Transboundary Impacts and Process Version 5.

Ref 4.5 Department for Transport (2014) National Policy Statement for National Networks. Available online at: www.gov.uk/government/publications

Ref 4.6 Secretary of State for Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework

Ref 4.7 Planning Inspectorate (2017) Advice Note Three – EIA Consultation and Notification.

Ref 4.8 Planning Inspectorate (2017) Advice Note Seven – EIA: Process, Preliminary Environmental Information and Environmental Statements.

Ref 4.9 Planning Inspectorate (2018) Advice Note Nine – Rochdale Envelope.

Ref 4.10 Planning Inspectorate (2017) Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects.

Ref 4.11 Planning Inspectorate (2018) Advice Note Twelve – Transboundary Impacts and Process.

Ref 4.12 Planning Inspectorate (2019) Advice Note Seventeen – Cumulative Effects Assessment.

Ref 4.13 Planning Inspectorate (2017) Advice Note Eighteen: The Water Framework Directive.

Ref 4.14 Highways England (2014) Road Investment Strategy 2015-2020.

Ref 4.15 Highways Agency (2019) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 4. LA 104 Environmental assessment and monitoring