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6.1 Environmental Statement
Chapter 5 – EIA Methodology and Consultation

Regulation 5(2)(a)

Planning Act 2008

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

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

M42 Junction 6 Improvement Development Consent Order 202[ ]

6.1 Environmental Statement
Chapter 5 EIA Methodology and Consultation

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5.1 Environmental scoping

Scoping of the assessments

5.1.1 A scoping exercise was undertaken in late 2017, the purpose of which was to establish the form and nature of the assessments to be undertaken as part of the environmental impact assessment (EIA) of the Scheme, and the level of detail they should be progressed to.

5.1.2 The scoping exercise was undertaken based on the Scheme design presented within the Preferred Route Announcement (see Chapter 4 Scheme history and alternatives), and took into account the maximum extents of land that was considered by Highways England at that time as being necessary for its construction, operation and maintenance.

5.1.3 The following documents were used to guide and inform the scoping exercise.

National Policy Statement for National Networks

5.1.4 As the Scheme comprises a road network nationally significant infrastructure project (NSIP), the methodologies within Section 5 of the National Policy Statement for National Networks (NPSNN) [REF 5-1] were referenced to ensure the scope of the EIA met the assessment requirements of this policy document.

5.1.5 Compliance with the methodological and assessment requirements of Section 5 of the NPSNN [REF 5-1] is presented within the Planning Statement [**TR010027/APP/7.1**].

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

5.1.6 The environmental and social factors stipulated in Regulation 5(2) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [REF 5-2] (as amended) (the EIA Regulations) as requiring consideration when undertaking an EIA of an NSIP were taken into account during the scoping exercise.

Design Manual for Roads and Bridges

5.1.7 Guidance contained within the Design Manual for Roads and Bridges (DMRB) Volume 11 [REF 5-3] was referenced during the scoping exercise, as this identifies a range of environmental topic areas for consideration in the assessment of highways projects and provides advice on the level of assessment detail appropriate to each.

5.1.8 Supplementary guidance contained within DMRB Interim Advice Note (IAN) 125/15: Environmental Assessment Update [REF 5-4], which provides further advice on ensuring that EIAs of road projects are both effective and efficient, was also referenced during the scoping exercise.

Topics for consideration in the EIA

5.1.9 Following a review of relevant policy and guidance [REF 5-1, REF 5-2, REF 5-3, REF 5-4], the scoping exercise identified that the following DMRB Volume 11 [REF 5-3] topics should be scoped into the EIA on the basis that construction (including demolition works), operation and maintenance of the Scheme could potentially lead to significant effects on the environment:

a. air quality – covering the factors of population, human health and air;

b. cultural heritage – covering the factor of cultural heritage;

c. landscape and visual effects – covering the factors of landscape and population;

d. biodiversity – covering the factor of biodiversity;

e. geology and soils – covering the factor of soil;

f. materials – covering the factors of waste and material assets;

g. noise and vibration – covering the factors of population and human health;

h. people and communities – covering the factors of human health, population, land, soil, and material assets;

i. road drainage and the water environment – covering the factors of flood risk, human health and water; and

j. assessment of cumulative effects – covering the potential interactions between the above factors (and those associated with other plans and projects).

5.1.10 The scoping exercise identified that matters relating to population and human health were potentially of relevance to many of the above topics, and therefore should be brought together and assessed qualitatively within the cumulative effects assessment.

5.1.11 The topic of climate was scoped into the EIA as a separate assessment due to the contribution that the Scheme could have to climate change, and its vulnerability to the effects of climate change.

5.1.12 The scoping exercise identified that matters associated with potential major accidents and disasters should consider the vulnerability of the Scheme to risk associated with man-made and naturally occurring events, and the extent to which they could alter the predicted environmental effects of the Scheme. This identified that major accidents and disasters should be covered within the above topics and not form a separate assessment.

5.1.13 Additionally, the scoping exercise 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 the Environmental Statement.

5.1.14 Following the undertaking of a preliminary screening exercise, the scoping exercise concluded no significant potential for transboundary effects to occur within the above topics, these being effects that could arise on other European Economic Area (EEA) States as a result of the Scheme. This was attributed to factors such as the characteristics of the Scheme, the geographical area of which effects would be confined, and the intervening distance to the nearest EEA State (the Republic of Ireland). The preliminary screening exercise was subsequently updated to reflect the final form of the Scheme and the outcomes of the EIA process, which confirmed that the original conclusions remained valid. The outcomes of the transboundary screening exercise are presented in Appendix 5.1 [**TR010027/APP/6.3**], and therefore transboundary effects are not considered further in the Environmental Statement.

5.1.15 In relation to the monitoring of significant environmental effects, the scoping exercise identified that the requirement for such actions would be best presented within an Outline Environmental Management Plan (OEMP) [**TR010027/APP/6.11**]. This document forms part of the Development Consent Order (DCO) application and has been prepared in line with environmental management guidance contained in DMRB IAN 183/14: Environmental Management Plans [REF 5-5].

5.1.16 The scoping exercise examined whether the decommissioning of the Scheme could result in significant effects within the above topic areas. This concluded that it would be highly unlikely that the Scheme would be decommissioned as the new and improved infrastructure would form an integral part of the local and strategic transportation network, with components having a lifespan of up to 120 years (see Chapter 3 The project). Accordingly, decommissioning has not been considered further in the Environmental Statement.

Scoping opinion

5.1.17 A scoping opinion on the information to be included within the Environmental Statement was requested from the Inspectorate, on behalf of the Secretary of State for Transport, in October 2017. The request was accompanied by a scoping report [REF 5-6] which reported the outcomes of the scoping exercise.

5.1.18 The scoping report [REF 5-6] provided the Inspectorate with the required information stipulated in Regulation 10(3) of the EIA Regulations [REF 5-2], and provided formal notification under Regulation 8(1)(b) of the intention to submit an Environmental Statement as part of the DCO application.

5.1.19 The Inspectorate provided their scoping opinion [REF 5-7] on 1 December 2017, which took account of the content of the scoping report [REF 5-6] and consultation responses received during the statutory 42 day response period.

5.1.20 The Inspectorate agreed with the majority of the proposed scope but highlighted a number of additional matters within the scoping opinion [REF 5-7] which required consideration in the EIA through the modification and broadening of the EIA scope. A request was also made within the scoping opinion [REF 5-7] for further evidence to be provided within the Environmental Statement to fully justify the proposed scoping out of matters identified as being unlikely to give rise to significant environmental effects.

Review and modification of the EIA scope

5.1.21 The EIA reported within this Environmental Statement has been undertaken in accordance with the scoping opinion [REF 5-7], the scope of which has been reviewed to ensure the EIA is proportionate and remains focused on the matters of genuine relevance to the determination of the DCO application.

5.1.22 The Inspectorate raised a number of general and topic-specific points which were reviewed against the scope presented within the scoping report [REF 5-6], in order to identify the requirements for further work. Advice was also sought from the Inspectorate on 14 December 2017[1] to clarify a number of specific matters raised in the scoping opinion [REF 5.7], following the review.

5.1.23 Following receipt of the scoping opinion [REF 5-7], consultation continued with relevant statutory and non-statutory bodies through a combination of written correspondence, meetings and workshops to obtain further views and opinions on the scope of work being undertaken, the prediction and assessment of impacts and effects, and the development of mitigation measures. Where undertaken, the details of this engagement are presented within Chapters 6 – 15.

5.1.24 Continued development of the Scheme design also influenced the scope of individual assessments progressed, for example by refining aspects of the engineering design to avoid sensitive environmental features or reduce the significance of effects on such interests.

5.1.25 As a result, the following modifications were made to a number of assessments and their associated reporting, which developed the approaches presented within the scoping report [REF 5-6]:

a. the scoped-in topic of people and communities was renamed population and health to align with the EIA Regulations [REF 5-2], the scope of which was modified to include the assessment of effects on human health, that was originally proposed to be reported as part of the cumulative effects assessment;

b. the scoped-in topic of materials was renamed material assets and waste, the scope of which was modified to align with the EIA Regulations [REF 5-2], and to include topic-specific assessment criteria and further detail on the identification of assessment study areas; and

c. the scoped-in topic of climate was modified to include clearer information on the identification of assessment study areas, how baseline information sources are considered in the assessment, and to identify potential measures that could be adopted to reduce greenhouse gas emissions.

[1] Meeting notes available from: https://infrastructure.planninginspectorate.gov.uk/projects/west-midlands/m42-junction-6-improvement/?ipcsection=advice&ipcadvice=fa7bba6922

5.1.26 An assessment was undertaken early in the EIA process to identify whether the Scheme would be vulnerable to risks associated with major accidents and disasters, and whether these could result in any change to the reported effects within other topics scoped into the EIA. A staged methodology was developed and applied for this assessment, using professional judgement, to:

a. identify any major accidents and disasters of relevance and categorise these in relation to the likelihood of occurrence and relationship to the Scheme, through a screening exercise;

b. describe the potential for any change in the significance of effects recorded within each relevant assessment topic for identified major accidents and disasters;

c. report the outcomes and conclusions within each assessment topic; and

d. describe any assumed mitigation measures to both support the conclusions and demonstrate that effects related to major accidents and disasters have been mitigated or can be managed to an acceptable level.

5.1.27 Full details of the major accidents and disasters screening exercise are presented within Appendix 5.2 [**TR010027/APP/6.3**]. The exercise concluded that the vulnerability of the Scheme to such events would be low, and that the Scheme would not be a contributing factor to causing or exacerbating these types of event. Accordingly, based on these outcomes, the topic of major accidents and disasters was scoped out from further consideration in the Environmental Statement.

5.1.28 All aspects considered in the EIA, and subsequent modifications made to the EIA scope following receipt of the scoping opinion [REF 5-6], are tabulated within Appendix 5.3 [**TR010027/APP/6.3**] to explain how these have been addressed in the Environmental Statement and where they are reported. Justification is also provided as to the reasons why certain matters remain, or have now, subsequently, been scoped out of the EIA. For example, where sufficient evidence has been gathered which confirms with a degree of certainty that there is no likelihood of significant environmental effects occurring.

5.1.29 The nature and extent of the modifications made to the EIA scope are such that they have not materially altered the basis of the assessment, or the ability to meet requirements of the scoping opinion [REF 5-6].

5.2 Surveys, predictive techniques and methods

Rochdale Envelope parameters and design uncertainty

5.2.1 Chapter 3 The project and Chapter 4 Scheme history and alternatives, explain how statutory and non-statutory consultation undertaken prior to submission of the DCO application has informed the design-development of the Scheme, as assessed through the EIA process. These chapters recognise that subject to the granting of the DCO, some design refinement will continue through detailed design within the Order Limits.

5.2.2 The matter of design uncertainty has been addressed within the EIA by adopting a precautionary approach to identifying significant environmental effects, through the establishment of a series of maximum development extents known as a 'Rochdale Envelope'.

5.2.3 The Rochdale Envelope is named after a UK planning law case [REF 5-8]. It 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.

5.2.4 The principle is founded on the assumption that as long as the technical and engineering parameters of a project fall within the limits of 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.

5.2.5 The realistic worst case scenario assumes that one or other of the parameters will have a more significant adverse effect that 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).

5.2.6 Advice published by the Inspectorate [REF 5-9] fully endorses the approach of assessing design uncertainty, whilst still meeting the requirements of the EIA Regulations [REF 5-3].

5.2.7 In line with this approach, a series of parameters have been established across a number of aspects relating to the design and construction of the Scheme to manage design uncertainty and provide flexibility for deviation where needed. For example, flexibility is needed to enable minor design refinements to be made during construction by the appointed contractor within the overall parameters of any consent granted, or to provide statutory undertakers with flexibility within which they can develop the final design solutions for the diversion of existing underground and overhead utilities.

5.2.8 These parameters are presented within Chapter 3 The project and include matters such as defining the maximum extent of land required to mitigate environmental effects, and the identification of horizontal and vertical limits of deviation within which the design of the Scheme can be adjusted if necessary, for example in response to local ground conditions.

5.2.9 This approach to managing uncertainty within defined parameters and limits ensures that any design changes that may arise post submission of the DCO application will not be of an order that renders the content of the Environmental Statement inadequate or invalid.

EIA guidance

5.2.10 The principal documents used to undertake and report the assessments presented within the Environmental Statement have been DMRB Volume 11 [REF 5-3] and DMRB IAN 125/15 [REF 5-4].

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

a. NPSNN [REF 5-1] – this sets out the need and government policies for road network NSIPs in England;

b. National Policy Planning Framework [REF 5-10] – this provides policy guidance on the treatment of environmental impacts and the achievement of good design;

c. The Inspectorate's Advice Notes [REF 5-9, REF 5-11, REF 5-12, REF 5-13, REF 5-14] – these provide guidance on EIA technical and procedural matters for NSIPs;

d. IEMA Guidelines for Environmental Impact Assessment [REF 5-15] – this provides best practice guidance for undertaking EIA; and

e. IEMA Environmental Impact Assessment: Guide to Shaping Quality Development [REF 5-16] – this sets out principles and framework for maximising the interaction between environmental thinking and project design within the decision-making process.

5.2.12 A number of the assessments reported in this Environmental Statement have also referenced and applied other topic-specific guidance published by public authorities and/or professional bodies, the details of which are presented within Chapters 6 – 15 where applicable.

Establishment of the baseline environment

5.2.13 The EIA commenced with the identification of the existing (baseline) environmental conditions that may be affected by the Scheme through a review of information relating to known, or the likely presence of, environmental resources and receptors within defined study areas to determine their relative value, importance or sensitivity towards change.

5.2.14 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.

5.2.15 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.

5.2.16 Environmental data, information and records were obtained using a combination of sources and techniques:

a. desk based sources – these included: previous published studies undertaken as part of the Scheme; 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 assessments;

b. 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; and

c. consultation – engagement with statutory and non-statutory organisations was undertaken to obtain factual information and records.

5.2.17 The establishment of the environmental baseline involved identifying the current state of the environment, and its likely evolution without implementation of the Scheme (referred to as the future baseline). A combination of predictive modelling and professional judgement was used to identify and take account of the following variables that have a likelihood of occurring in the absence of the Scheme:

a. changes from natural events or trends (including human activities) – for example; where ecological species move from their current location over time and populate different areas;

b. changes in environmental and societal values – for example; where the status of the environment alters due to protection through planning designation; and

c. changes to the problem being addressed by the Scheme – for example; where existing traffic issues on the network alter as a consequence of other development projects being implemented.

5.2.18 The environmental conditions associated with the future baseline are described within Chapter 3 The project.

Spatial and temporal scope

5.2.19 The spatial extents of assessment study areas vary in accordance with the environmental topic area being considered.

5.2.20 The study area(s) for each environmental topic is outlined within each of the topic chapters (see Chapters 6 – 15); these reflect the geographical area over which environmental effects may potentially arise and take account of DMRB guidance [REF 5-3].

5.2.21 All topic study areas incorporate the land and features within the Scheme's Order Limits as a minimum. For some topics, study areas have been defined as being relatively localised to the boundary of the Scheme's Order Limits, whilst for others they extend outward beyond this boundary to capture the surrounding road network, distant communities, and environmentally sensitive areas.

5.2.22 It is accepted practice to assess the potential effects of a development project temporally at defined points in its lifecycle, in order to establish how environmental conditions and effects may alter over time. These conditions can change in response to influences such as:

a. the progression of other development projects, which may alter existing land use relationships and the movement, volume and distribution of traffic;

b. new or amended planning policy, which may alter the status and protection of existing environmental areas, components and features;

c. the effect of climate change, which may result in an increased risk of flooding and increases in greenhouse gas emissions that could directly and indirectly alter the current condition of the environment; and

d. the natural evolution of the environment, which may change the current balance and relationship of its components and features.

5.2.23 Accordingly, the approach has been to assess the Scheme at key stages of its construction, operation and future maintenance, against both the current and future baseline conditions where appropriate, using a combination of available information, scientific knowledge and professional judgement.

5.2.24 The following assessment years and scenarios have been defined and adopted within the EIA, where relevant to the topic under consideration:

a. current baseline (2017 – 2018) – reflective of the conditions which exist at the time of gathering baseline environmental data and undertaking the EIA;

b. future baseline (2020) – reflective of the conditions that would be experienced in the future, immediately prior to implementation of the Scheme;

c. construction (2020 – 2023) – reflective of the conditions that would be experienced during the period over which construction of the Scheme is planned to take place;

d. operation (2023) – reflective of the conditions that would be experienced when the Scheme would become operational and open to traffic (this is referred to as the Opening Year or the Year of Opening)[2]; and

e. future conditions (2038) – reflective of the conditions that would be experienced at a point 15 years after the year of opening of the Scheme (this is referred to as the Design Year or Year 15).

5.2.25 For some assessments such as air quality and noise and vibration, DMRB Volume 11 [REF 5-3] refers to the future conditions as the “do minimum” and “do something” scenarios.

5.2.26 The do minimum scenario represents the conditions that would exist at a given point in the future without the Scheme in place, but accounting for ongoing maintenance on the road network, the natural evolution of the environment, and the influence that other development projects would have on this.

5.2.27 The do something scenario represents the above conditions, but with the Scheme in place.

[2] The EIA has been undertaken based on the Scheme becoming operational at the end of 2023, and this reflects the year adopted within the traffic model developed for the Scheme [**TR010027/APP/7.2**]. The construction programme within Chapter 3 The project includes contingency, and identifies that completion of the final finishing works to M42 Junction 6 could potentially extend into spring 2024. Notwithstanding this, the phased approach to delivery of the Scheme means that the vast majority of its components would be completed and be fully operational by the end of year 2023. Accordingly, for the purposes of EIA, it is considered that the year 2023 is representative of the operational conditions that would exist in year 2024, should completion of the works extend into this period.

5.2.28 Both sets of terminology have been used in this Environmental Statement, where appropriate, to reflect the conventions set out in established guidance.

Construction traffic

5.2.29 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 private vehicles that would be added to the road network.

5.2.30 Daily and hourly one-way and two-way movements on the road network 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 3 The project).

5.2.31 Construction vehicle movements were calculated based on a number of assumptions about how the Scheme would be built. These included vehicle occupancy rates, the periods over which HGV movements would be distributed, and when the peak construction period would occur.

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

Operational traffic

5.2.33 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.

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

a. establish the minimum engineering requirements of the Scheme;

b. inform the assessment of accidents;

c. inform the economic appraisal of the Scheme; and

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

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

a. the Policy Responsive Integrated Strategy Model (PRISM) for the West Midlands – this is a multi-modal transport model which underpins traffic modelling and forecasting used to inform transport policy, planning, scheme development and appraisal;

b. the M42 Junction 6 LAM – this model was developed by cordoning the road network from PRISM and adding more zones and network to provide a more detailed understanding of traffic movements close to the Scheme;

c. the M42 Junction 6 Operational Model – this model was based on a cordon of the LAM, constructed to understand the routeing of traffic and the operation of junctions in terms of queuing and delay; and

d. operational capacity modelling of individual and/or linked junctions – this involved detailed modelling of specific junctions and slip roads to understand their operational capacity.

5.2.36 Other development projects in the area that could influence future traffic flows on the network were taken account of as part of the modelling process undertaken in 2017. 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:

a. Birmingham City Council;

b. Coventry City Council;

c. Nuneaton & Bedworth Borough Council;

d. Solihull Metropolitan Borough Council; and

e. Warwick District Council.

5.2.37 A review was also undertaken of other highway projects identified within the Department for Transport's Road Investment Strategy 2015-2020 [REF 5-17] to identify other planned schemes on the strategic road network with a relationship to the Scheme.

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

a. near certain – meaning the development will happen or there is a high probability that it will happen;

b. more than likely – meaning the development is likely to happen but there is some uncertainty;

c. reasonably foreseeable – meaning the development may happen but there is significant uncertainty; and

d. hypothetical – meaning there is considerable uncertainty as to whether the development will ever happen.

5.2.39 Only those other development projects for which delivery was "near certain" or "more than likely" were subsequently taken forward into the traffic model. These developments have also been used as the basis for the cumulative effects assessment (see Chapter 16 Assessment of cumulative effects).

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

a. AM peak hour – between 08:00 and 09:00 (from a peak period of 07:00 to 09:30);

b. inter-peak average hour – between 09:30 and 15:30; and

c. PM peak hour – between 17:00 and 18:00 (from a peak period of 15:30 to 19:00).

5.2.41 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.

5.2.42 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 [**TR010027/APP/7.2**].

Other modelling

5.2.43 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 (for example those relating to climate change) to model the conditions that would occur within the different assessment scenarios and years adopted.

Impact identification and assessment

5.2.44 Impacts comprise the following identifiable changes to the baseline conditions:

a. direct impact – for example the loss of ecological habitat to accommodate a project;

b. indirect impact – for example pollution downstream arising from silt deposition during earthworks;

c. secondary impact – for example changes to ecological species as a result of water pollution;

d. short-term (or temporary) impact – for example dust generated as a result of construction activities;

e. medium-term impact – for example the cutting back of planting which is allowed to regenerate; and

f. long-term (or permanent) impact – for example the introduction of new built form into an established view.

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

a. beneficial (positive) – for example the introduction of planting to screen visually detracting elements; or

b. adverse (negative) – for example loss of a valuable environmental feature.

5.2.46 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 [REF 5-3] and DMRB IAN 125/15 [REF 5-4] guidance[3].

5.2.47 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 experience, perception and opinion of the individual undertaking the assessment using available information and professional judgement.

5.2.48 An acknowledgement has been made within the impact assessments of any uncertainty or assumptions attached to the prediction of impacts, such as those arising from the validity of baseline data decreasing with the passage of time or where assessments have extrapolated their findings from incomplete or inconclusive data. In instances where high levels of uncertainty exist, such as when information is unable to be gathered due to land access restrictions, a precautionary approach assuming a worst case impact has been adopted.

Environmental mitigation

5.2.49 Mitigation is the term to describe measures including any process, activity or design to avoid or reduce the adverse environmental impact or effects of a development project.

5.2.50 The iterative optioneering and design-development processes have sought to mitigate environmental impacts during the early stages of the EIA by:

a. designing-out potential issues between the Scheme and environmental resources and receptors;

b. embedding features such as landscaping and drainage infrastructure into the overall design of the Scheme; and

c. identifying standard ‘good practice’ working methods and techniques to be employed by the appointed Contractor during construction of the Scheme.

Embedded mitigation measures

5.2.51 A range of measures have been embedded into the design of the Scheme for implementation and delivery, the effectiveness of which has been proven on other road schemes developed on the strategic road network.

[3] The guidance refers to magnitude differently across assessment topics, adopting either the term ‘magnitude of impact ‘or ‘magnitude of change’. This is a consequence of DMRB Volume 11 [REF 5-3] being updated over a long period of time, which has resulted in inconsistency of terminology. Both terms have therefore been used interchangeably in the Environmental Statement.

5.2.52 Embedded measures include, for example, the placing of new sections of road in earthwork cuttings to reduce traffic-related noise, the incorporation of landscaping to visually screen and contain new or improved road components, and reducing the loss of ancient woodland by minimising landtake.

5.2.53 Efforts have been made through the design-development process to avoid certain types of embedded mitigation that could consequently generate adverse impacts. For example, wooden barriers erected along the sides of a new road can attenuate vehicle noise, but can themselves form an intrusive component in existing views.

5.2.54 Chapter 4 Scheme history and alternatives, summarises how the design of the Scheme has evolved over time and how the EIA process has influenced its final form, as described in Chapter 3 The project.

5.2.55 Embedded mitigation measures forming part of the Scheme design are described in Chapters 6 – 15, and are recorded within the Register of Environmental Actions and Commitments within Appendix 3.1 [**TR010027/APP/6.3**].

5.2.56 Embedded mitigation measures are illustrated on the Environmental Masterplan, see **Figure 8.8** [**TR010027/APP/6.2**].

Standard mitigation measures

5.2.57 Standard mitigation measures, comprising management activities and techniques, shall be implemented during construction of the Scheme to limit impacts through adherence to good site practices and achieving legal compliance.

5.2.58 These measures include, for example, applying construction site dust suppression techniques within working areas, which the appointed Contractor would be required to implement as part of their working practices under the terms of their contract.

5.2.59 Standard mitigation measures are detailed in Chapters 6 – 15, and are recorded more fully by topic and theme within the OEMP [**TR010027/APP/6.11**].

5.2.60 The delivery of standard mitigation measures is secured through the requirements contained within the draft DCO.

Additional mitigation measures

5.2.61 Additional mitigation comprises measures over and above any embedded and standard mitigation measures, for which the EIA has identified a requirement to further reduce significant environmental effects.

5.2.62 Based on the outcomes of the assessments reported in Chapters 6 – 15, no additional mitigation measures have been identified.

Environmental compensation

5.2.63 Environmental compensation has been considered where mitigation at an affected location is not possible to avoid or reduce a significant effect, in which case the undertaking of offsetting measures have been identified at other locations.

5.2.64 Similar to embedded mitigation, compensation measures have been incorporated into the design of the Scheme and include, for example, the offsetting of ancient woodland loss by planting new woodland of a greater size than that lost, in a location adjacent to the existing resource.

5.2.65 Where identified, compensation measures forming part of the Scheme design are described in Chapters 6 – 15, and are recorded within the Register of Environmental Actions and Commitments within Appendix 3.1 [**TR010027/APP/6.3**].

5.2.66 Compensation measures are illustrated on the Environmental Masterplan, see **Figure 8.8** [**TR010027/APP/6.2**].

Environmental enhancement

5.2.67 Where possible, environmental enhancements have been incorporated into the design of the Scheme. These are measures which are over and above any mitigation and compensation measures required to mitigate the adverse effects of the Scheme and/or maximise the opportunity for beneficial effects from the Scheme.

5.2.68 The commitment to delivering environmental enhancements is reflected in Highways England's company licence [REF 5-18]. This requires Highways England, when exercising its functions, obligations and legal duties, to "*minimise the environmental impacts of operating, maintaining and improving its network and seek to protect and enhance the quality of the surrounding environment*".

5.2.69 Enhancements have been incorporated into the design of the Scheme to meet, where possible, the requirements of the NPSNN [REF 5-1] and Highways England's company licence [REF 5-18]. Such measures include, for example, the introduction of bat boxes on retained areas of woodland within the Order Limits.

5.2.70 Unlike mitigation and compensation measures, enhancements are not factored into the determination of significant effects; however, the potential benefits of these measures are identified within the Environmental Statement, in accordance with the NPSNN [REF 5-1].

5.2.71 Environmental enhancement measures are illustrated on the Environmental Masterplan, see **Figure 8.8** [**TR010027/APP/6.2**].

Biodiversity offsetting

5.2.72 Highways England has committed to reducing the net loss of biodiversity across the strategic road network, the objective being to deliver no net loss by 2020 and a net gain in biodiversity by 2040.

5.2.73 In pursuit of achieving no net loss across the Scheme, and following the application of Highways England's biodiversity offsetting metric (see Chapter 9 Biodiversity), several land parcels within the Order Limits (over and above those associated with mitigation, compensation and enhancement measures) have been identified for potential ecological improvement.

5.2.74 The potential ecological improvements focus on bringing existing habitats on these land parcels into more favourable management, the locations of which are illustrated on the Environmental Masterplan, see **Figure 8.8** [**TR010027/APP/6.2**].

5.2.75 Delivery of these potential improvements will be sought through the provisions of the DCO where possible, and/or via third party agreements with landowners, and if secured will contribute to achieving no net loss in biodiversity.

5.2.76 Subject to their delivery, the identification of these potential improvements allows effective and valuable environmental benefits to be identified, and assists in meeting the aspirations of stakeholders who have an interest in achieving wider environmental benefits on development projects, where possible.

Environmental effects

5.2.77 Environmental effects are the consequence of impacts. By way of example, an impact arising from a new highway project could be represented by a loss of agricultural land to accommodate a new section of carriageway, the effect (or consequence) of which could be compromising the future viability of the business.

5.2.78 For an effect to occur there has to be a pathway between the impact and the resource or receptor. Effects have therefore been formulated as a function of the importance, value or sensitivity of an environmental resource or receptor, and the magnitude of impact (or change) predicted. A combination of professional judgement, defined thresholds, established criteria and standards has been used in their definition.

5.2.79 Significant criteria presented in Section 5.3 have been used to report the significance of effects, the assigning of which has relied on reasoned argument, professional judgement, established thresholds and guidelines, and the views of relevant organisations.

Cumulative environmental effects

5.2.80 The effects from a development project may not be significant on their own; however, when combined with other effects these could become significant.

5.2.81 The EIA has identified cumulative effects resulting from the combination of different activities within the Scheme, and from activities associated with other development projects in the surrounding area.

5.2.82 Full details of the methodology, the development projects identified and the conclusions of the cumulative assessment are presented within Chapter 16 Assessment of cumulative effects.

5.3 Significance criteria

5.3.1 Generic criteria contained in DMRB Volume 11 [REF 5-3] for sensitivity (or importance/value), magnitude of impact (or change) and significance of effect have been applied across the assessed topics to ensure the identified environmental effects are assessed and evaluated in a comparable manner, except where other prevailing standards, thresholds and/or established criteria have been followed or applied. In such instances, the deviation from the generic criteria is explained within the individual assessment methodologies contained in Chapters 6 – 15.

5.3.2 **Table 5.1** presents the generic sensitivity (or importance/value) criteria that have been applied in the EIA, reproduced from DMRB Volume 11 [REF 5.3].

Table 5.1: Criteria for determining the sensitivity (or importance/value) of environmental resources and receptors

Sensitivity (or importance/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 (or lower)	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

5.3.3 **Table 5.2** presents the generic magnitude of impact (or change) criteria that have been applied in the EIA, reproduced from DMRB Volume 11 [REF 5.3].

Table 5.2: Criteria for determining the magnitude of impact (or change) on environmental resources and receptors

Magnitude of impact (or change)	Typical descriptors
Major (adverse)	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
Major (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.
Moderate (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.
Minor (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.
Negligible (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.

5.3.4 **Table 5.3** presents the generic significance of effect criteria that have been applied in the EIA, adapted from DMRB Volume 11 [REF 5.3].

Table 5.3: Criteria for determining the significance of effect on environmental resources and receptors

Significance of effect	Typical descriptors
Very large	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Large	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process
Moderate	These beneficial or adverse effects are considered to be important in informing the decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
Slight	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

5.3.5 The significance of cumulative effects has been ascribed using criteria based on the ratings contained within **Table 5.3**, the definitions of which are detailed within Chapter 16 Assessment of cumulative effects.

5.3.6 DMRB Volume 11 [REF 5-3] does not explicitly define what a significant effect is, and does not prescribe the level at which an effect within the scales of significance could be deemed significant.

5.3.7 Based on professional judgement, individual and cumulative effects of very large, large or moderate significance are considered to represent a 'significant' effect in the context of the EIA Regulations [REF 5-2], except where different criteria or guidance adopted within the assessments methodologies in Chapters 6 – 15 present a different threshold or approach to the determination of a significant effect.

5.4 General assessment assumptions and limitations

5.4.1 In addition to the use of the Rochdale Envelope principles to manage design uncertainty in the EIA, a number of general limitations and difficulties were encountered. These have influenced how data collection, modelling and assessments have been progressed and reported in the Environmental Statement, and have principally related to:

a. the availability and accuracy of third-party data and records to inform the establishment of baseline conditions;

b. the availability of information relating to the form, extent and location of statutory undertakers works to existing underground and overhead utilities that would require diversion as part of the Scheme (see Section 5.7);

c. the availability of land access to undertake environmental surveys and monitoring in the field, to supplement and verify desk-based and third-party information;

d. the need to undertake certain ecological surveys at sub-optimal times of the year due to seasonal constraints; and

e. the availability and reliability of information regarding other development projects, for inclusion in the cumulative effects assessment.

5.4.2 In response, a number of assumptions have been made in the assessment where information and/or survey access has been lacking or incomplete. These include:

a. adopting a precautionary approach in the assessment of impacts and effects where necessary;

b. applying worst-case assumptions regarding the Scheme where information is unavailable or incomplete; and

c. using a combination of modelling and professional judgement to predict the baseline conditions that could occur in the future, in the absence of the Scheme.

5.4.3 Further details regarding assumptions and limitations adopted within the topic-specific assessments are presented within Chapters 6 – 15. Details of the assumptions and limitations associated with the cumulative effects assessment are presented within Chapter 16 Assessment of cumulative effects.

5.5 Reporting of the assessments

5.5.1 The following common format has been adopted in the reporting of the individual assessments presented within Chapters 6 – 15:

a. competent expert evidence – this section introduces the assessment and provides a brief statement regarding the competency, qualifications and experience of the individual responsible for its production;

b. 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;

c. 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;

d. 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;

e. study area – this section sets out the spatial extents of the study area(s) used in the assessment;

f. baseline conditions – this section presents information on the existing (and future) environmental conditions associated with the study area(s);

g. 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;

h. design, mitigation and enhancement measures – this section describes the embedded and standard mitigation measures relevant to the topic area, details any compensation measures that would be implemented to offset environmental impacts, and details environmental enhancement measures relevant to the topic;

i. 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

j. 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.

5.5.2 The reporting of the cumulative effects assessment within Chapter 16 Assessment of cumulative effects, has adopted the following format:

a. competent expert evidence – this section introduces the assessment and provides a brief statement regarding the competency, qualifications and experience of the individual responsible for its production;

b. 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;

c. assessment assumptions and limitations – this section summarises any assumptions applied and/or any limitations encountered in the assessment;

d. assessment of combined effects – this section presents the outcomes of the assessment in relation to effect interactions on environmental resources and receptors;

e. 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

f. 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.

5.6 Duplication of assessment

5.6.1 Information gathered and assessed as part of the EIA process has been used to inform the following assessments undertaken for the Scheme:

a. Habitats Regulations Assessment: No Significant Effects Report [**TR010027/APP/6.8**] – this assessment has referenced the information gathered as part of the biodiversity assessment reported in Chapter 9 Biodiversity;

b. Flood Risk Assessment [**TR010027/APP/6.10**] – the modelling and assessment of flood risk has referenced the information gathered as part of the road drainage and the water environment assessment reported in Chapter 14 Road drainage and the water environment;

c. Preliminary Water Framework Directive Assessment in Appendix 14.1 [**TR010027/APP/6.3**] – this assessment has referenced the information gathered as part of the road drainage and the water environment assessment reported in Chapter 14 Road drainage and the water environment; and

d. Screening of Transboundary Effects (see Appendix 5.1 **TR010027/APP/6.3**) – this exercise has referenced the information gathered as part of the biodiversity assessment reported in Chapter 9 Biodiversity.

5.7 Statutory undertakers works

Overview

5.7.1 A number of existing overhead and underground utilities within the Order Limits will require diversion, connection and/or protection works to facilitate progression of the Scheme, as described in Chapter 3 The project. These utilities include overhead electricity transmission equipment, buried gas pipelines and communications equipment, and comprise assets that are under the control of statutory undertakers (utility companies).

5.7.2 Discussions have commenced with the relevant utility companies, and at the time of submission of the DCO application the full details of the requisite works have yet to be fully established.

5.7.3 Accordingly, the Works Plans [**TR010027/APP/2.3**] identify the existing location and alignment of affected assets and illustrate a limit of deviation around each, within which the requisite works would be defined and carried out by utility companies responsible.

5.7.4 The Schedules within the draft DCO [**TR010027/APP/3.1**] detail the type of works that are envisaged will be necessary to each affected asset, based on the discussions to date and information provided by the appointed buildability contractor for the Scheme.

Approach to the assessment of statutory undertakers works

5.7.5 A focused assessment of the statutory undertakers works has been carried out using professional judgement to establish the relationships between the assets (and their limits of deviation) and the environmental resources and receptors identified within Chapters 6 – 15, in order to:

a. identify whether implementation of the works would either alter the construction and/or operational phase impacts and effects reported in Chapters 6 - 15, or result in new or different impacts and effects on environmental resources and receptors; and

b. identify whether the works would affect the ability to deliver the mitigation, compensation or enhancement measures identified within Chapters 6 – 15.

5.7.6 A review of the form, location and nature of the works described in Chapter 3 The project identified that works to the following utilities would have the greatest potential to result in temporary and/or permanent changes to existing environmental conditions, and thereby potentially alter the deliverability of mitigation and/or the conclusions reported in Chapters 6 – 15:

a. Western Power Distribution 132kV overhead transmission works;

b. Cadent Gas high pressure gas main; and

c. Severn Trent Water aqueduct.

5.7.7 These utilities were accordingly taken forward for further assessment, and are presented on **Figure 3.6** and **Figure 3.7** [**TR010027/APP/6.2**].

5.7.8 It was concluded that works associated with the other underground and overhead assets described in Chapter 3 The Project, for example communications diversions, would be unlikely to alter the deliverability of mitigation and/or the conclusions of the assessments presented in Chapters 6 - 15 due to their scale, location and the nature of the works operations that would be undertaken by the utility companies to implement them. These works were discounted from further consideration in this assessment.

5.7.9 Based on the location of the works and the type of construction operations required to implement them, a review of Chapters 6 – 15 concluded that environmental resources and receptors within the following environmental topics had the greatest potential to be affected by these works (and therefore experience either new, different or greater effects):

a. Chapter 7 Cultural heritage;

b. Chapter 8 Landscape;

c. Chapter 9 Biodiversity;

d. Chapter 12 Noise and vibration; and

e. Chapter 14 Road drainage and the water environment.

5.7.10 All remaining environmental topics were discounted from this assessment on the basis that there would be limited interaction between the works and the environmental resources and receptors assessed within each.

Conclusions of the assessment

5.7.11 **Table 5.4** summarises the key conclusions from this assessment of the environmental topics, and should be read alongside the corresponding chapters within the Environmental Statement which report the impacts and effects of the Scheme excluding these utility works.

Table 5.4: Environmental assessment of statutory undertakers works

Environmental topic	Western Power	Cadent Gas	Severn Trent Water
Cultural heritage (construction)	The assessment recorded potential for physical impacts on unknown archaeological assets arising from construction works associated with these utility diversions; however, as Chapter 7 Cultural Heritage concluded that the Scheme would likely result in a significant effect on such assets (prior to archaeological evaluation), the assessment has concluded that the significance of this effect would not alter as a result of these works. It is expected that the scope of the archaeological evaluation for the Scheme, presented in the Written scheme of investigation for investigation for archaeological evaluation trenches in Appendix 7.1 [**TR010027/APP/6.3]**, will need to be extended to include investigations on land contained within the limits of deviation of these utility diversions, as potential archaeology within this land could potentially be disturbed by the works and may result in new effects.		
Cultural heritage (operation)	Following implementation of these works, the undergrounding of overhead transmission cabling and the removal and relocation of existing towers would not alter the reported effects of the Scheme on the setting of identified heritage assets.	As these utilities would be located underground, no changes to the effects on the setting of heritage assets identified in the assessment are predicted, and no new effects are predicted.	
Landscape (construction)	The nature of these underground and overhead works would be comparable to other construction activities to be undertaken as part of the Scheme, and are predicted to result in temporary loss of existing landscape features (for example hedgerows), and a temporary change in the balance of components that contribute to landscape character. The assessment has identified that all underground and overhead utility works would be undertaken within Landscape Character Area 2, which in Chapter 8 Landscape has been assessed as experiencing a significant adverse effect during construction of the Scheme. The assessment has concluded that although these works would introduce new effects on landscape character, the significance of this effect would not alter as a result of these works being implemented.		
	In relation to visual impacts, the assessment has identified that visual receptors in proximity to the overhead utility works may have an awareness of construction activities	In relation to visual impacts, the assessment has identified that these underground works would appear as temporary, transient construction activities along defined working corridors within the landscape from receptors in proximity to the works. These works would therefore not alter the reported	

Environmental topic	Western Power	Cadent Gas	Severn Trent Water
	(for example works to existing towers), but that these works would be temporary in nature and would be set against a backdrop of existing built form and the M42 motorway corridor. Such changes are not expected to alter the reported visual effects of the Scheme.	conclusions of the construction phase visual impact assessment of the Scheme from visual receptors afforded an awareness of construction activities.	
Landscape (operation)	Following implementation of these works, it is predicted that the undergrounding of some of the existing overhead infrastructure would constitute a beneficial improvement in landscape character, associated with the removal of visually detracting components.	Following completion of the works, any disturbed areas of ground within the landscape would be restored to their former condition. Accordingly, no operational effects on Landscape Character Area 2 are predicted as the utilities would be buried underground.	
	Following implementation of these works, the undergrounding of overhead transmission cabling and the removal and relocation of existing towers would not alter the reported effects of the Scheme on visual receptors, and may lead to a beneficial reduction in the amount of visually detracting elements in existing views.	As these utilities would be located underground, no changes to the reported visual effects of the Scheme identified are predicted, and no new effects are predicted.	
Biodiversity (construction)	The assessment has identified that the overhead works to the west of M42 Junction 6 would result in limited temporary loss and disturbance of existing habitats during construction.	The assessment has identified that the underground works would potentially result in the temporary loss and disturbance of existing habitats during construction. Unavoidable losses of hedgerow habitat are predicted to occur within the limits of deviation; however these would be mitigated by the utility companies through a combination of translocation of hedgerows in accordance with best practice techniques, and replacement planting. For works south west of M42 Junction 6, the assessment of the Scheme has assumed that great crested newt and reptiles are present. The provisions contained within the draft licence (see Chapter 9	

Environmental topic	Western Power	Cadent Gas	Severn Trent Water
		Biodiversity) would apply to works in this area. For works south of Shadowbrook Lane, it is expected that the utility companies would identify routes that avoid impacting on (or retaining) trees within the limits of deviation that have potential to support bats. As the limits of deviation for the underground works south of Shadowbrook Lane are adjacent to Barber's Coppice (ancient woodland), the assessment has recorded that new effects associated with disturbance and accidental damage may occur during implementation of the works. However, the utility companies would apply standard best practice construction measures to protect retained habitat within the woodland from such effects. It is expected that the utility companies would identify diversion routes that avoid impacting on features including buildings, mature trees and hedgerows wherever possible.	
Biodiversity (operation)	In relation to the above ground assets, no changes to the reported biodiversity effects of the Scheme are predicted to occur, and no new effects are predicted.	As these utilities would be located underground, no changes to the reported biodiversity effects of the Scheme are predicted, and no new effects are predicted.	
Noise and vibration (construction)	In relation to noise, implementation of the underground and overhead works are not expected to generate noise emissions greater than those predicted to occur during construction of the Scheme. The nature of any contribution to noise will be dependent upon the proximity of the works to noise sensitive receptors, and the nature of the operations being carried out; however, no additional receptors to those already identified are predicted to experience effects associated with these works, and all works would be managed by these utility companies in accordance with their standard control measures and construction best practice to minimise noise and keep this within acceptable limits.		
	In relation to vibration, should a tunnel boring machine be used to underground the existing overhead cables beneath the A45 Coventry Road, this is likely to result in some new temporary, localised vibration at noise sensitive receptors. However, it is predicted that these works would be implemented and	No new or different temporary vibration is predicted during the implementation of the underground works due to the mobile, transient nature of the works along a defined working corridor. Mitigation measures and controls applicable to the overhead works would be implemented by the utility companies to manage any construction related vibration on noise sensitive receptors.	

Environmental topic	Western Power	Cadent Gas	Severn Trent Water
	managed by the utility company in accordance with their standard control measures and construction best practice to protect existing assets and keep any vibration within acceptable limits.		
Noise and vibration (operation)	No new or different noise or vibration effects on sensitive receptors are predicted to occur from the operation of these underground and overhead utilities.		
Road drainage and the water environment (construction)	The risk of construction works resulting in accidental spillages and/or pollution to groundwater and surface water bodies would be managed in accordance with the standard construction working procedures implemented by the utility companies. Similar best practice construction techniques would be applied during the dewatering of areas within construction working corridors. Accordingly, no new effects or different effects are predicted to the reported assessment conclusions for the Scheme.		
	Not applicable.	Not applicable.	Standard best practice construction measures would be implemented by the utility company to manage any risk associated with the potential for localised flooding from works to the existing aqueduct, such that no new or different effects are predicted.
Road drainage and the water environment (operation)	No new or different effects associated with water quality, flood risk, or surface water and groundwater are predicted to occur from the operation of these underground and overhead utilities.		

5.7.12 Discussions will continue with the relevant utilities providers to confirm the details of the requisite diversion, connections and protective works.

5.8 References

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