TRANSPORT AND WORKS ACT 1992

Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006

THE NETWORK RAIL (EAST WEST RAIL WESTERN SECTION PHASE 2) ORDER

DRAFT ENVIRONMENTAL STATEMENT

CHAPTER 4: EIA METHODOLOGY

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4. EIA METHODOLOGY

4.1 Introduction

4.1.1 This chapter explains the methodology used to undertake the Environmental Impact Assessment (EIA) of the Project. The process falls into a number of distinct but related stages, namely:

- The screening and scoping process;
- The consultation process;
- Preparation of the Draft ES; and
- Preparation of the final ES.

4.1.2 The methodology employed in preparing the Draft ES is in accordance with the following regulations and guidance:

- The European Council Directive 2011/92/EU, as amended (the EIA Directive);
- The Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006 (the Applications Rules), in particular Rule 11 and Schedule 1;
- The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (the EIA Regulations), as amended; and
- EIA guidance documents including:
    - Department for Transport (DfT) (2006), 'A Guide to Transport Works Act Procedures';
    - Transport and Works Act (TWA) Order Unit, DfT (2008), 'TWA Good Practice Tips for Applicants';
    - DETR (2000), 'Environmental Impact Assessment: A Guide to Procedures';
    - Highways Agency (2008), 'Design Manual for Roads and Bridges (DMRB), Volume 11 (Environmental Assessment), Section 2 (General Principles of Environmental Impact Assessment), Part 3 (Environmental Assessment Techniques)';
    - Institute of Environmental Management and Assessment (IEMA) (2006), 'Guidelines for Environmental Impact Assessment';
    - IEMA (2015), 'The IEMA Environmental Impact Assessment Guide to: Shaping Quality Development'; and
    - NR (2013), 'Sustainable Development Strategy'.

4.2 Screening and Scoping

4.2.1 Screening exercises are undertaken at the outset of EIA to determine whether a project is likely to have a significant effect on the environment and therefore require a statutory EIA.

4.2.2 As set out in Chapter 1 (Introduction), the Applications Rules set out the requirement for an ES. Specifically, Rule 7 deals with the requirement for an ES, and screening decisions. It states that when making an application, the submission of environmental information is required for works that fall within Annex I of the EIA Directive, or works that fall under Annex II of the EIA Directive unless the Secretary of State has notified the Applicant that an EIA is not required. These Annexes identify specific categories and types of development. If a particular development falls within Annex I, an EIA of the development will be mandatory. If a development falls within Annex II, an EIA will be required only if it is considered that the development proposed is likely to have a significant environmental effect.

4.2.3 The Project involves the promotion of an operational railway that is some 100km in length, and so may fall within Annex I as being the construction of a line for long-distance railway traffic. Even if the Project were not to fall within Annex I, then it would fall within Annex II as it involves the construction of a railway which is likely to have significant effects upon the environment.

4.2.4 Under Rule 7(4) of the Applications Rules, before making an application, other than for an application for an Annex I development, a request may be made in writing to the Secretary of State for a decision as to whether or not a formal EIA would be required. As the Project meets the EIA screening criteria, NR did not seek this advice.

4.2.5 It is also possible for an applicant to apply to the Secretary of State under Rule 8 of the Applications Rules for a Scoping Opinion. This is a process whereby an applicant can, by submitting a Scoping Report, seek the Secretary of State's views as to the information that should be provided in the ES. In responding, the Secretary of State provides what is known as a Scoping Opinion.

4.2.6 A Scoping Report for the Project was submitted to the Department for Transport (DfT) on 30 June 2015. A Scoping Opinion was received from the DfT on 12 August 2015. The Scoping Opinion considered responses from the following organisations:

- Natural England;
- Historic England;
- Environment Agency;
- Canal and River Trust;
- Oxfordshire County Council (OCC);
- Cherwell District Council (CDC);
- Buckinghamshire County Council (BCC);
- Aylesbury Vale District Council (AVDC);
- Central Bedfordshire Council (CBC);
- Bedford Borough Council (BBC);
- Wycombe District Council (WDC); and
- Milton Keynes Council (MKC).

4.2.7 The Scoping Report and the Scoping Opinion can be found in Appendix 1.1 and 1.2 in Volume 3. In addition, Chapters 6-15 in this Main Statement include detailon how the Scoping Opinion has been addressed in the assessment.

4.2.8 Specific details of the legislation, policy and guidance documents applicable to individual technical assessments are provided in each technical chapter.

4.3 Consultation

4.3.1 Formal and informal consultation has been undertaken with statutory consultees throughout the preparation of the Draft ES. Consultation has been used to:

- Agree appropriate assessment methodologies;
- Refine the scope of the assessment;
- Obtain environmental data; and
- Allow consultees an opportunity to inform the Project design.

4.3.2 Table 4.1 below sets out the formal stages of the consultation undertaken. Further details in relation to specific technical assessments are provided in each technical chapter.

Table 4.1 Details of formal consultation undertaken

Consultation Type	Date	Description
Scoping process	June 2015 to August 2015	The Scoping Report was submitted to the DfT on 30 June 2015 and the Scoping Opinion was received on 12 August 2015.
Public and Statutory consultation – Round 1	4 September 2015 to 16 October 2015	The first round (Round One) of a two-phase process was held to formally consult with named bodies, potential landowners and local communities. Named bodies identified in Schedules 5 and 6 of The Transport and Works (Applications and Objections Procedure)(England and Wales) Rules 2006 and potential landowners or those identified as having a land interest were each sent a letter outlining the Project and a CD copy of the consultation pack. Each consultee was invited to contact NR to comment on or discuss the details of the pack. Local communities were invited to also participate in the consultation and attend eight public consultation events held at six venues over a two week period. These were as follows: • Monday 21 September, Elim Church, Princes Risborough; • Wednesday 23 September, Rivets Sports and Social Club, Aylesbury; • Thursday 24 September, John Paul II Centre, Bicester; • Friday 25 September, Sycamore Hall, Bletchley; • Monday 28 September, Public Hall, Winslow; • Tuesday 29 September, Public Hall, Winslow; • Wednesday 30 September, Forest Centre, Marston Moretaine; and • Thursday 1 October, Forest Centre, Marston Moretaine.

Consultation Type	Date	Description
		Prior to these formal consultation events, a notification campaign was undertaken. This campaign included placing eight newspaper adverts, distributing posters, sending leaflets to 36,000 households, emails to landowners and creating an e-newsletter. The material displayed at the first phase of consultation included: • Interactive digital displays x 10 screens – with full details of all parts of the Project; • Interactive map; • Computer generated image (CGI) – fly through of part of the Project; and • Full copies of the consultation pack and maps (available also at nine locations along the route).Leaflets containing information about the Project with a free post response card, and including a link to the NR Project website. For consultees that were unable to attend the exhibition, a dedicated email address (ewrconsultation@networkrail.co.uk) was set up. A feedback form was available on NR's website (www.networkrail.co.uk/east-west-rail) and consultees could call NR's 24 hour helpline (08457 11 41 41). These feedback options were advertised at the public exhibitions and in all material used to promote the consultation.

Consultation Type	Date	Description
Public and statutory consultation – Round 2	30 June to 11 August 2017	This represents the second round (Round Two) of a two-phase process to consult with named bodies, potential landowners and local communities. Consultation materials have been sent to Schedule 5 and 6 consultees, potential landowners or those having a land interest and deposited in locations along the route. Local communities are also invited to take part in this consultation. 10 public consultation events will be held at: • Monday 10 July, John Paul II Centre, Bicester • Tuesday 11 July, Scots Sports and Social Club, Bletchley • Wednesday 12 July, Public Hall, Winslow • Thursday 13 July, Sports and Social Club, Launton • Friday 14 July, Village Hall, Waddesdon • Monday 17 July, Village Hall, Newton Longville • Tuesday 18 July, Harpur Suite, Bedford • Wednesday 19 July, Forest Centre, Marston Moretaine • Thursday 20 July, Community Centre, Charndon • Friday 21 July, Elim Church, Princes Risborough This Draft ES forms part of the second round of consultation and reports the EIA progress to date. Additional comments received as a result of this second round of consultation will be considered by the Applicant when completing the final ES for submission with the TWAO Application. It should be noted that on-going design development, as well as consultation comments, may affect the EIA and its findings. Therefore, the conclusions reached or mitigation proposals included within this Draft ES should be viewed as provisional, and potentially subject to change.

4.3.3 A detailed account of the consultation process undertaken and how it has influenced the Project will be provided in the Consultation Report, which will be submitted with the TWAO Application.

4.4 Scope of the Assessment

Spatial Study Area

4.4.1 Each technical chapter identifies a spatial scope over which the assessment is undertaken. The spatial study areas identified vary by environmental topic depending on the nature of impacts and the locations of receptors. The study areas defined often extend over a greater area than the Project Area[30].

4.4.2 When determining the spatial scope for a given technical chapter, the following are considered:

- The extent of the Project Area;
- Relevant legislation, policy and guidance;
- The existing baseline environment;
- The location of receptors;
- The mechanisms by which effects could occur;
- The likely Project impacts;
- The likely cumulative Project impacts;
- The wider area affected, such as traffic movements including road and rail; and
- The Scoping Opinion and consultation comments received.

Temporal Scope

4.4.3 The EIA assesses the likely significant effects anticipated to arise from the construction and operation of the Project as follows:

- Construction - the anticipated effects that could arise as a direct result of construction activities (e.g. demolition activities, vegetation clearance, piling, building new structures); from the temporary use of land (e.g. construction sites, compound areas, access routes), and from

[30] The Project Area is defined as the geographical footprint of the Project i.e. the land physically affected by the permanent and temporary works, including environmental mitigation

associated changes in traffic movements (e.g. traffic diversions, road closures, footpath diversions); and

- Operation - the anticipated effects from the operation of the Project, such as from maintenance activities, the operation of new infrastructure (e.g. stations, track, earthworks, structures, drainage ancillary infrastructure) or consequent altered traffic flows (permanent highway changes, new rail service patterns).

4.4.4 A five year construction period has been assessed. It should be noted that construction activities will not be continuous at any one location over the five year period, with the exception of strategic compound locations. Construction is anticipated to begin in early 2019.

4.4.5 In accordance with best practice, and consistent with the Calculation of Railway Noise (CRTN) Technical Memorandum[31], the operational effects arising from noise are assessed at the year of opening and a future year of operation Further information is provided in Chapter 10 (Noise and Vibration). A future year of operation has also been used in the assessment of effects as set out in Chapter 8 (Air Quality), Chapter 12 (Landscape and Visual Impacts) and Chapter 14 (Traffic and Transport).

4.5 Environmental Baseline

4.5.1 The baseline environment comprises the environmental characteristics and conditions of the area likely to be affected by the Project that are present at the time of the assessment.

4.5.2 The baseline environment is identified by making use of existing available data and/or through undertaking additional desk based studies, field surveys or modelling. The methodology for establishing the baseline environment for each environmental topic is described in each technical chapter.

Future Baseline

4.5.3 The future baseline environment comprises the baseline (as defined in 4.5.1) together with characteristics and conditions that were not present at the time of assessment but that are predicted to be present during

[31] Department of Transport (1995)

construction or operation of the Project (for construction and operational effects respectively). This includes both the presence of other consented development or forecast changes in conditions, for example, forecast background traffic growth or forecast growth in the population size of otters.

4.5.4 Construction and commissioning of HS2 is expected to take place between 2017 and the end of 2026 and therefore under construction at the same time as the Project. The operation of HS2 has been considered to comprise part of the future baseline during the operation of the Project when considering operational effects. Chapters 9 (Ecology), 10 (Noise and Vibration) and 12 (Landscape and Visual Impacts) consider a 'future baseline' that includes HS2 operating. For more information about how this Draft ES considers cumulative effects, refer to Chapter 15 (Cumulative Effects), which also details the specific cumulative assessment methodology applied.

4.5.5 Chapter 2 (Project Description) of this Draft ES sets out the existing and proposed future train services proposed as part of the Project. The methodology and assumptions in relation to changes in future road traffic are set out in Chapter 14 (Traffic and Transport).

4.5.6 Chapter 3 (Consideration of Alternatives and Design Evolution) sets out the expected future picture in the scenario where the Project does not occur.

4.6 Assessment Methodology

4.6.1 The EIA identifies likely significant environmental effects of the Project on identified receptors by comparing the future position during construction and operation of the Project against the baseline environment.

4.6.2 Each topic area utilises the following, general assessment steps, unless otherwise stated in that technical chapter:

- Identification of receptors/resources and assessment of their sensitivity;
- Assessment of impacts on the receptors/resources, and their magnitude;
- Assessment of effects;
- Application of the mitigation hierarchy; and

- Assessment of any residual effects.

Identification of receptors/resources and assessment of their sensitivity

4.6.3 Within each technical chapter receptors/resources are identified and an appropriate baseline has been developed.

4.6.4 Environmental receptors are defined as humans (including as users of dwellings, places of recreation, places of employment and community facilities) and human systems (for example, the employment market). Environmental resources are defined as biophysical features. Environmental resources include those elements of the environment that are essential to, or of value to, the functioning of natural or human systems. These include areas or elements of ecological, landscape or heritage value, soil, air, watercourses and water bodies, dwellings, places of employment and community facilities.

4.6.5 Once a receptor/resource is identified, the sensitivity to change arising from the construction or operation of the Project is determined (e.g. low, medium high). Where appropriate, and where recognised methodologies and guidance allows, each technical discipline applies a scale in their assessment to define sensitivity. Table 4.2 below gives an example of the sensitivity criteria that may be applied by a technical discipline.

Table 4.2 Description of the Sensitivity of an Environmental Resource/Receptor

Sensitivity	Typical Descriptors
Very High	Very high importance and rarity, international scale and very limited (i.e. no potential for substitution/replacement).
High	High importance and rarity, national scale, and limited potential for substitution/replacement.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution/replacement.
Low	Medium or low importance and rarity, local scale. Considerable potential for substitution/replacement.

Assessment impacts and their magnitude

4.6.6 An impact is a physical or measurable change to a receptor/resource attributable to the construction and/or operation of a project compared with baseline conditions. Impacts have both a quantifiable value (e.g. loss of

10ha of mature trees) and a magnitude (e.g. high, medium, low or no change).

- Impacts are classified according to the following categories as:
- Direct or indirect;
- Short, medium or long-term and permanent or temporary;
- Permanent or temporary;
- Reversible or irreversible;
- Beneficial or adverse; and
- Cumulative (intra-project/inter-project).

4.6.7 Each technical discipline discusses how the magnitude of an impact is assessed within the respective technical chapter.

4.6.8 Table 4.3 gives an example of the classification of the magnitude of an impact that may be applied by a technical discipline.

Table 4.3 Description of the Magnitude of an Impact

Magnitude of Impact	Type	Typical Criteria Descriptors
High	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.
Medium	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.
Low	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.
Very Low	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No Change	N/A	No loss or alteration of characteristics, features or elements; no observable effects in either direction.

4.7 Assessing Effects

4.7.1 An effect is the consequence of an impact to a receptor/resource. This is assessed by considering the sensitivity of the receptor/resource and the magnitude of the impact experienced by the receptor/resource. An example of the methodology applied in this context is given in Table 4.4 below. It should also be noted that where a technical discipline assesses effects according to discipline specific guidance, details of this are given in the respective chapter.

Table 4.4 Assessment of Effect

		Receptor/resource sensitivity			
		Very high	High	Medium	Low
Impact Magnitude	High	Major	Major	Major	Moderate
	Medium	Major	Major	Moderate	Minor
	Low	Major	Moderate	Minor	Negligible
	Very low	Moderate	Minor	Negligible	Negligible
	No change	None	None	None	None

4.7.2 Within EIA, effects are categorised as significant or not significant. Only significant effects are reported within an ES. In Table 4.4, all effects assessed as being moderate or above are considered to be significant. Minor or negligible effects are not considered significant in EIA terms.

4.8 Application of the Mitigation Hierarchy

4.8.1 The mitigation hierarchy sets out the order in which mitigation actions should be considered, from most desirable to least desirable. This exercise is necessary in order to address effects identified during an EIA. The mitigation hierarchy is described further in Table 4.5.

Table 4.5 Mitigation Hierarchy

Mitigation Action	Description	General Examples
Avoid	Measure(s) taken to ensure an identified effect does not occur. This is the most preferable solution.	Design change to avoid land take; management of emissions at source, e.g. dust control measures, which can be known as embedded mitigation.
Minimise or reduce	Measure(s) taken to decrease the significance of an identified effect. Effects can either become not significant or remain significant, although to a lesser extent. Where effects cannot be avoided this is the next most preferable solution.	Provision of noise insulation; local character sympathetic design of buildings and other infrastructure, known as mitigation measures.

Mitigation Action	Description	General Examples
Restore or compensate	Where an effect cannot be avoided or reduced, it is proposed to rehabilitate affected areas, or provide alternative equivalent resource elsewhere.	Biodiversity off-set initiatives; reinstatement of agricultural land condition, also referred to as mitigation measures.

4.8.2 Where the technical chapters identified effects as a result of construction and operation of the Project, mitigation measures are proposed to avoid, reduce or compensate for these effects. Chapter 16 (Summary of Mitigation) summarises the mitigation measures proposed for the Project and describes how these measures will be secured.

Embedded Mitigation

4.8.3 Application of the mitigation hierarchy is inherent in the design of the Project, as described in Chapter 3 (Consideration of Alternatives and Design Evolution). Where measures have been included as part of the design, they can be described as embedded mitigation. The assessment of likely significant effects in the technical chapters has therefore taken these measures into account. In the final ES, each technical chapter will present, within the Limitations and Assumptions section, the embedded mitigation the assessment has considered as being inherent.

4.9 Residual Effects

4.9.1 If it is considered that residual significant effects may still remain after mitigation, such effects are reported in each technical chapter. As noted above, the Applicant has adopted a precautionary approach to this assessment, effects are considered to be significant in EIA terms if they are categorised as moderate or above.

4.10 Cumulative Effects

4.10.1 Cumulative effects (those effects arising from interactions between different effects on the same receptor, whether arising from within the Project, or from interactions between the Project and other developments) are

identified and considered in Chapter 15 (Cumulative Effects), which also details the specific cumulative assessment methodology applied.

4.10.2 The EIA assumes that HS2 will be constructed simultaneously with the Project, in particular between Grebe Lake, Queen Catherine Road and Station Road, Quainton (known as the HS2 Area). As such the construction of HS2 will be considered cumulatively with the construction of the Project. In some technical chapters, HS2 is considered in order to give context to the assessment of the effects of the Project

4.11 Limitations of the Draft ES

4.11.1 This is a Draft ES. The final ES will be informed by on-going design, survey, modelling, and assessments along with the output from Round Two Consultation.

4.11.2 The Draft ES has been prepared during a period of on-going design development and consultation. In order to assess the environmental effects of the Project during this period of evolving design, the Draft ES has made a series of assumptions about the Project, based on information available at the time when the assessment started. Since then, the Project design has continued to develop.

4.11.3 The most notable area of design development relates to the Project Boundary, which, for the purposes of assessment, was fixed in November 2016. This Project Boundary delineates the Project Area for the purposes of assessment, and is presented on figures accompanying the Draft ES as the "Project Boundary (November 2016)". This varies from the current "Application Boundary and Extent of Permanent and Temporary Works" that is presented on the Scheme Drawings submitted for consultation.

4.11.4 In general terms, the Project Area that is assessed within this Draft ES is larger than the area within the Application Boundary presented in the Scheme Drawings, and as such presents a worst case assessment with regard to overall project land take and the impact of that land take. The larger area also means that the assessed Project Boundary is often closer to receptors than the current Application Boundary. This means that the

impact assessment of many receptors presented is greater than if the current Application Boundary was used. Figure 1.1 (Volume 4) illustrates the EWR Project Boundary assessed in this Draft ES compared to the TWAO Scheme Boundary.

4.11.5 As an example, construction noise levels experienced at residential properties will be higher the closer the properties are to a construction activity (i.e. from the Project Boundary, which is the outer limit where construction activities will occur), so larger impacts have been reported in this Draft ES where the Application Boundary is further away from receptors than the assessed Project Boundary.

4.11.6 It should also be noted that although the assessment presented in the Draft ES might assume that all construction activities will take place on the Project Boundary, this is assumed as a worst case scenario, as in fact most activities will occur somewhere within the Project Area, some distance from the Project Boundary.

4.11.7 For the assessment of some aspects of the Project, such as construction activities, a worst case scenario is to assume that the noise, or dust, producing activities could take place anywhere within and up to the Project Boundary. As these activities are unlikely to be undertaken at the limits of the Project Boundary, the approach taken in the assessments is therefore conservative. In addition, where the Project Boundary is of a wider extent than the final Order Limits, the Draft ES will encompass more receptors. Therefore impacts identified at certain receptors may well be less.

4.11.8 The on-going design process will continue to seek to reduce the impacts already identified. Following Round Two Consultation, the assessments reported in this Draft ES will be updated to reflect these design changes. These updated assessments will be reported in the final ES.

4.11.9 Any assessments, conclusions or mitigation proposals recorded within this Draft ES are therefore provisional and subject to change.

4.11.10 The following indicate topics that will be included in the final ES but are not fully assessed at this time in this Draft ES:

- Assessment of transport effects from construction and operational traffic;
- Assessment of noise effects arising from construction/operational traffic;
- Assessment of noise effects arising from construction activities;
- Assessment of effects on farm holdings;
- Condition assessment of cultural heritage assets;
- Assessment of effects on groundwater;
- Assessment of photomontages; and
- Assessment of effects on air quality arising from construction and operational traffic.

4.11.11 The approach for future baseline and cumulative effects are set out above and also within Chapter 15 (Cumulative Effects). Operational effects of HS2 as future baseline are addressed in three of the technical chapters, Chapter 9 (Ecology), Chapter 10 (Noise and Vibration) and Chapter 12 (Landscape and Visual Impacts). The approach to future baseline and cumulative effects will be subject to review and presented in the final ES.

4.11.12 The limitations for each technical topic are set out in more detail in each technical chapter.

4.12 New EIA Directive

4.12.1 The EIA is undertaken in accordance with the 2011 EIA Directive (2011/92/EU) and relevant implementing domestic legislation.

4.12.2 A new EIA Directive (2014/52/EU) came into force on 15 May 2014 and was transposed into UK legislation on 16 May 2017. Part 12, Miscellaneous, of the Regulations refers to revocation and transitional provisions and state that:

The 2011 Regulations continue to apply where before the commencement of these Regulations -

(a) an applicant, appellant or qualifying body, as the case may be, has submitted an environmental statement or requested a scoping opinion; or

(b) in respect of local development orders, the local planning authority has in connection with that order prepared an environmental statement or a scoping opinion or requested a scoping direction

4.12.3 A Scoping Report for the Project was submitted to the DfT on 30 June 2015 and a Scoping Opinion was received from the DfT on 12th August 2015. The Project was scoped under the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (the EIA Regulations), as amended and prior to the new EIA Directive and therefore the 2011 Regulations will continue to apply to the Draft ES and Final ES.