

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 15: CUMULATIVE EFFECTS

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15. INTRODUCTION

15.1 General

15.1.1 Cumulative effects are those caused by several incremental impacts, or changes, adding together to create an effect over and above that created by the individual impacts. The sensitivity of a receptor to these incremental impacts and the magnitude of the incremental impacts themselves determine the significance of the cumulative effect.

15.1.2 The term cumulative describes two types of cumulative effect:

- Inter-project effects “*occur as a result of the impacts of the proposals interacting with the impacts of other developments in the vicinity*” at a receptor³⁵⁴. For example, a residential receptor may be affected by noise from more than one scheme; and
- Intra-project effects “*occur between different environmental topics within the same proposal, as a result of that development’s direct effects*”³⁵⁵. For example, a residential receptor may be affected by noise, air quality and visual effects from the same scheme.

15.1.3 This chapter provides an initial assessment of the likely significant intra-project effects arising from the interaction of multiple effects within the Project or multiple schemes affecting the same receptor. However, as a full assessment of the Project has not yet been undertaken for every technical discipline, and because the design of the Project is still in development, this chapter does not present a full assessment of intra-project effects. For this draft, inter-project effects have not been included as the list of relevant schemes may change substantially prior to final submission. However, the methodology for this assessment is included.

15.2 Legislation, Policy and Guidance

15.2.1 Rule 11 and Schedule 1 of the Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006 (the Applications Rules) sets out the information to be included in an Environmental

³⁵⁴ IEMA 2012 State of EIA Practice in the UK

³⁵⁵ IEMA 2012 State of EIA Practice in the UK

Statement (ES) submitted in connection with an application under the Applications Rules. This includes:

'a description of the likely significant effects of the proposed project on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project' [emphasis added].

15.2.2 In relation to environmental impact assessments, national Planning Practice Guidance states that although each application should be considered on its own merits, there are occasions where other current or approved proposals may be relevant in determining whether the development which forms the subject of the application is likely to give rise to any significant effects. This includes circumstances where the overall combined environmental impact of the proposals might be greater or have different effects than the sum of their separate parts³⁵⁶.

15.2.3 There is currently a range of guidance available on the assessment of cumulative effects, but at present there is no single agreed industry-standard method. A number of sources of guidance were therefore consulted in defining the methodology for this cumulative assessment:

- European Community (1999) Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions³⁵⁷;
- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5, HA 205/08 Assessment and management of environmental effects³⁵⁸;
- Canadian Environmental Assessment Agency (CEAA) (1999) Cumulative Effects Assessment Practitioners Guide³⁵⁹; and

³⁵⁶ Paragraph: 024 <http://planningguidance.comunities.gov.uk/blog/guidance/environmental-impact-assessment/screening-schedule-2-projects/> [Online]. [Accessed 18 January 2016].

³⁵⁷ EC (1999) *Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions*. Brussels: EC [Online]. [Accessed 27 February 2015]. Available from: <http://ec.europa.eu/environment/eia/eia-support.htm>.

³⁵⁸ Highways Agency, Scottish Government, Welsh Assembly Government and Department for Regional Development Northern Ireland (2008) *DMRB Volume 11, Section 2, Part 5, HA 205/08 Assessment and management of environmental effects*. London: Highways Agency [Online]. [Accessed 27 February 2015]. Available from: <http://www.standardsforhighways.co.uk/dmr/vol11/section2/ha20508.pdf>

³⁵⁹ Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker. 1999. *Cumulative Effects Assessment Practitioners Guide*. Prepared by AXYS Environmental Consulting Ltd. and the CEA Working Group for the Canadian Environmental Assessment Agency, Hull, Quebec.

- Institute of Environmental Management and Assessment (IEMA) (2011) *The State of Environmental Impact Assessment Practice in the UK*³⁶⁰;
- CEAA (2014) *Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012. DRAFT*³⁶¹; and
- Planning Inspectorate (PINS) (2015) *Advice Note Seventeen: Cumulative Effects Assessment*³⁶².

15.3 Consultation

15.3.1 A Scoping Report was submitted to the DfT in June 2015, Chapter 15 of which set out the proposed approach for the assessment of cumulative effects. A Scoping Opinion was received in August 2015. Table 15.1 provides a summary of the comments received in relation to the assessment of cumulative effects and how each comment has been addressed.

³⁶⁰ <https://www.iema.net/assets/uploads/Special%20Reports/iema20special20report20web.pdf>

³⁶¹ CEAA (2014) *Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012. DRAFT*. ISBN 978-1-100-25181-3.

³⁶² IPC (2015) *Advice Note Seventeen: Cumulative Effects Assessment*. <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf>

Table 15.1 Summary of scoping opinion comments in relation to the assessment of cumulative effects

Consultee	Comment(s)	Response
EWR Consortium	<p>Cross reference all topics in a matrix and cross reference the following topics:</p> <ul style="list-style-type: none"> • land use with LVIA; • air quality with LVIA; • noise and vibration with air quality; • ecology with landuse; • LVIA with land use, traffic and cultural heritage; • water with land use; • geology with LVIA; and • traffic with LVIA. 	<p>A summary of the different receptor types and the relevant technical chapters is included in 15.5: Intra-Project Effects Assessment.</p>
	<p>Consider cumulative views from residential uses.</p>	<p>Where the potential for significant cumulative visual effects is identified, the assessment in the Final ES will use available information from the relevant scheme documents to consider these effects.</p>
	<p>Cumulative should take into consideration existing railway infrastructure, pylons, wind turbines, existing development, major road structures.</p>	<p>Existing infrastructure is considered as part of the baseline and therefore is already taken into account by the EIA. Refer to the individual technical chapters of this ES for further information.</p>
	<p>All settlements with 50+ properties and/or a school and/or any other sensitive location within 1km of the line should be identified as an urban area which is in the higher risk category.</p>	<p>The cumulative effects assessment considers receptors on an individual or grouped basis, based on the findings of the ES technical chapters, in combination with other relevant schemes. The sensitivity of a receptor is defined within the relevant technical chapters within the Draft ES.</p>

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Consultee	Comment(s)	Response
EWR Consortium	Cumulative assessment and mitigation need to be addressed at a local level.	The spatial scope of the assessment is set out in 15.6: Inter-Project Effects Methodology and comprises the local authority areas through which the Project passes. The cumulative effects on receptors will be assessed on an individual or grouped basis, and, where appropriate, will be mitigated for at this level.
EWR Consortium	Cumulative should include HS2 as well as the Bedford & Milton Keynes Waterway.	<p>The final ES and assessment of the Project will consider the cumulative impacts of HS2.</p> <p>The Bedford & Milton Keynes Waterway is identified in the local planning documents for BBC, CBC and MKC. At this time, there is insufficient information available about the scheme to undertake a meaningful assessment of cumulative effects. Therefore, this proposal has been scoped out of this assessment.</p>
	Expect committed development to be part of cumulative - those under construction/consented/ submitted for consent/safeguarded in a development plan or programme.	The cumulative assessment methodology specifies that the schemes scoped into the assessment of cumulative effects are those under construction, those consented in whole or part but not yet under construction, those submitted for consent but are not yet determined, and those identified and safeguarded in a development plan or other Local Authority plan or programme, which are likely to progress prior to the completion of the Project.
DfT	Address cumulative effects of planned major transport and other infrastructure schemes, taking account of committed development.	The cumulative assessment methodology specifies that the schemes scoped into the assessment of cumulative effects are those under construction, those consented in whole or part but not yet under construction, those submitted for consent but are not yet determined, and those identified and safeguarded in a development plan or other Local Authority plan or programme, which are likely to progress prior to the completion of the Project.
	The EIA should include consideration of any other development in the planning process or consented in the cumulative assessment of LVIA.	

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Consultee	Comment(s)	Response
<p>Natural England</p>	<p>The following projects should be included:</p> <ul style="list-style-type: none"> a. existing completed projects; b. approved but uncompleted projects; c. on-going activities; d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in combination effects. 	<p>The methodology in 15.6: Inter-Project Effects Methodology specifies that the schemes scoped into the assessment of cumulative effects are those under construction, those consented in whole or part but not yet under construction, those submitted for consent but are not yet determined and those identified and safeguarded in a development plan or other Local Authority plan or programme, which are likely to progress prior to the completion of the Project.</p>
	<p>Reiteration of requirements of the EIA Regulations, including the assessment of cumulative effects.</p>	<p>The cumulative effects chapter to be submitted with the Final ES will fulfill the requirement of the relevant Regulations; in this case the Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006, which set out the information to be included in ESs accompanying a TWAO.</p>

15.3.2 Further to the consultation undertaken as part of the scoping exercise, the EWR Consortium was consulted in January 2016 to advise on relevant committed developments to be included in the assessment and, where possible, identify those which may emerge as formal submissions in the near future.

15.3.3 The EWR Consortium will be consulted again in summer 2017 to ensure the assessment of cumulative effects to be presented in the Final ES is informed by up to date information.

15.4 Intra-Project Effects Methodology

15.4.1 Each technical chapter assesses the categories of receptors and/or specific named receptors relevant to that topic's methodology. In some instances, the same receptor or resource may be assessed in more than one technical chapter. In these cases, there is the possibility that several individual effects on the same receptor may add up to create a significant cumulative effect. Thus, when considering the intra-project effects on a given receptor or group of receptors, several technical chapters are reviewed. To assist this process, the potentially relevant chapters are identified for broad categories of receptor, as set out in Table 15.2. These receptor categories are considered individually later in this section, including a discussion of the relevant linkages and pathways that may cause a given receptor type to be affected by a given topic.

15.4.2 Technical assessments do not necessarily reference receptors or resources directly. For example, the Water chapter's assessment of potential effects to groundwater Source Protection Zones does not explicitly state that there are potential human receptors, but the potential for drinking water abstraction means that this is a possibility. Hence a careful consideration of each chapter and assessment is required.

15.4.3 This assessment looks at each resource/receptor category in turn and uses the following process:

- Review of each technical chapter to determine if it addressed (explicitly or implicitly) that resource/receptor category. This provided an initial list of technical chapters to review, which is shown in Table 15.2;

- Identification of where a technical chapter had already taken into account all relevant factors when determining impacts. For example, the Ecology chapter takes account of land take, dust, noise and contamination, meaning that effects on ecological receptors reported in other relevant chapters need to be interpreted in the light of this to avoid double counting;
- In order to determine if an intra-project effect could occur on a given receptor or resource, that receptor or resource needed to be specifically referenced in more than one technical chapter. In the case of air quality and noise impacts on a residential receptor, for example, both chapters would need to identifiably refer to that receptor; usually in the form of an address or specific location. Thus from each chapter it needs to be determined what specific receptors are assessed;
- From the lists of specified receptors or resources, the residual effect identified in each chapter is noted. For example, a given residential receptor may be assessed as incurring a minor adverse noise effect, a negligible air quality effect, and a moderate adverse visual effect;
- Once the residual effects on each resource or receptor are determined, a screening process is undertaken. Where all the residual effects on a given receptor or resource are negligible (or equivalent terminology), that receptor or resource is not considered for intra-project effects assessment. This screening process allows the assessment to focus on likely significant effects only; and
- Where a given receptor or resource is affected by at least one non-negligible residual effect, all the effects upon that receptor are considered (including “negligible” or equivalent ones). Given that there is no settled guidance on how to determine whether very different effects combine significantly, each instance of potential intra-project effects needs to be considered individually. In determining if there are any significant intra-project effects – effects that are more than the individual residual effects alone – consideration is given to the nature and magnitude of the individual effects. Intra-project effects are only determined to be significant or not-significant.
- Where a significant cumulative effect is identified, provision of additional mitigation is to be considered.

Assumptions and Limitations

- 15.4.4 The intra-project cumulative effects assessment uses the stated residual effects, as presented in each of the technical chapters at the time of drafting. Where a summarising statement is given (e.g. “after mitigation there were no significant residual effects on any receptors”, or “after mitigation, there were minor adverse effect on all identified human health receptors” or similar), the finding is applied to all receptors of the relevant

categories. Where different receptors are identified as incurring different effects, these specific results are used in this assessment.

- 15.4.5 At the time of writing, a full assessment of the Project (which is subject to design development) has not been undertaken by all of the technical disciplines. For example, the traffic and transportation assessment is not complete at this stage. A complete assessment will be reported in the Final ES.

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Table 15.2 Receptor Types and Relevant Chapters

Receptor/Resource	Notes	6. Agriculture and Land Use	7. Cultural Heritage	8. Air Quality	9. Ecology	10. Noise and Vibration	11. Geology and Soils	12. Landscape and Visual	13. Water	14. Traffic and Transport
Human	Long-term (e.g. residents) or short-term e.g. drivers, pedestrians, construction workers	✓		✓		✓	✓	✓	✓	✓
Property	Residencies and other buildings			✓		✓	✓			
Ecological	Species and sites			✓	✓		✓		✓	
Cultural Heritage	Designated or undesignated; built or archaeological		✓				✓	✓		
Landscape	Landscape character of an area							✓		
Controlled Waters	Surface water or groundwater						✓		✓	
Geology and Soils	(Economic) mineral resources and geological sites						✓	✓		

15.5 Intra-Project Effects Assessment

15.5.1 The following sections consider each receptor type in turn, as identified in Table 15.2, and for each discuss the approach and findings of each of the relevant chapters before concluding as to the whether there are likely to be any significant cumulative effects.

Human

15.5.2 Human receptors can potentially be affected by a range of impacts. There are possible health impacts from air quality effects (e.g. construction dust); the mobilisation of contamination in the ground (e.g. contaminated dust as considered in Geology and Soils); contamination of potable water sources (such as Source Protection Zones). Effects from noise, vibration and traffic may also have health implications. Visual, dust, noise and vibration impacts can be considered as a nuisance and residential amenity issue; and direct loss of land can also affect residents near to operational or construction site boundaries.

Air Quality

15.5.3 The air quality assessment in Chapter 8 considers human health receptors; specifically, “any location where a member of the public may experience changes in air quality or amenity”. With appropriate mitigation, no significant effects are expected during either construction or operational phases. This will be confirmed in the Final ES, once traffic data are available.

Noise and Vibration

15.5.4 The noise and vibration assessment in Chapter 10 considers the effects of noise and vibration on human health receptors in residences, amenity areas, and community facilities within 300 m of the proposed track.

15.5.5 Given appropriate mitigation during construction, no significant residual effects are anticipated during this phase. A range of adverse effects are identified during operation. Construction and operational effects will be confirmed in the Final ES, once traffic data are available.

Geology and Soils

- 15.5.6 The geology and soils assessment in Chapter 11 considers human health receptors such as local residents and site workers being exposed to contamination. Local residents are assessed as a category of receptor rather than specific individual receptors. The concluded effect represent a worst case for that category of receptor (more distant receptors may in practice incur lesser effects).
- 15.5.7 It also considers the effects on controlled water receptors including Principal Aquifers and groundwater Source Protection Zones, which could be used for drinking water abstraction. It was not possible to assign such a finding to a specific receptor; however, there is only one “minor adverse” effect identified in one section, with all other effects being neutral or “minor beneficial”, so, in practice, the cumulative assessment does not lack as a result of this.
- 15.5.8 During construction, effects on off-site residents are deemed to be “minor adverse”, with effects on construction workers ranging from minor to moderate adverse. Operational effects on off-site residents are mostly minor beneficial, because existing contamination would have been remediated (the rest are neutral, with no adverse effects). Effects on maintenance workers are deemed to be neutral.

Landscape and Visual

- 15.5.9 The visual assessment in Chapter 12 considers viewpoints based on residential and work-place receptors, community and recreational locations, and road users. These are all relevant to cumulative effects on humans because they are predicated on a human receptor at the given location.
- 15.5.10 A range of adverse effects are identified at a variety of receptors, from slight to large, with effects typically becoming less adverse over time once mitigation planting develops.

Water

- 15.5.11 The water assessment in Chapter 13 considers the potential effect on groundwater Source Protection Zones, which are used for potable water supply, thus having human health implications. No significant residual effects are identified.

Traffic and Transport

- 15.5.12 The traffic and transport assessment in Chapter 14 will consider the potential for effects on humans as road users (car users, public transport users, horse riders, and cyclists) pedestrians, and residents.
- 15.5.13 At the time of writing, the assessment is not available to include in this cumulative assessment. As such traffic and transportation effects are not included in this Draft ES.

Agriculture and Land Use

- 15.5.14 The land use assessment in Chapter 6 considers the effect of temporary or permanent land take on homes and community receptors. Of the limited number of properties that would be affected, the effects range from moderate adverse to major adverse, mostly for properties near the railway boundary.

Cumulative Effects

- 15.5.15 The tables in Appendix 15.1 (Volume 3) show the identified human receptors and the potential for cumulative effects.
- 15.5.16 In CDC, the most notable individual effects were those related to land take in the Agriculture and Land Use chapter, and to visual amenity as assessed in Landscape and Visual chapter. For other topics, effects are generally not deemed to be significant. An exception to this was the finding of a major adverse operational noise effect on Station Cottage, Station Road. However, no receptor is assessed by multiple chapters and deemed to be affected significantly by more than one topic. As such no cumulative effects are anticipated in the Cherwell District Council sub-section.

15.5.17 In the Aylesbury Vale: Claydon/Quinton sub-section, there is broadly the same pattern of effects as noted in the Cherwell District Council sub-section. However there are several receptors that are significantly affected by cumulative effects. These are:

- Station House, Station Road (CQ5 in Fig. 12.2.5):
 - Construction: moderate visual effect and major land use effect;
 - Operation: major noise effect and moderate visual effect at year 1, although the later reduces to neutral after 15 years;
- Pear Tree House, Queen Catherine Road (CQ12 in Fig. 12.2.5):
 - Construction: large visual effect and major land use effect;
 - Operation: major noise effect and large visual effect;
- Railway Cottages, Queen Catherine Road (CQ14 in Fig. 12.2.5):
 - Construction: large visual effect and major land use effect (reduced access);
 - Operation: major noise effect and large visual effect;
- Properties near Verney Junction (CQ20 in Fig. 12.2.5):
 - Operation: major noise effect and large visual effect in year 1 reducing to moderate in year 15.

15.5.18 All the above receptors are close to the Project Area. In the case of land use effects caused by temporary land take, this will be compounded by significant visual effects. During operation, there would be the noise and visual effects of an operational railway.

15.5.19 In the remaining sub-sections (Aylesbury Vale: Winslow/Swanbourne, Aylesbury Vale: Aylesbury, Milton Keynes, Central Bedfordshire, Bedford Borough and Wycombe), the most frequently observed notable effects are noise, visual and land use. However there are no instances where a given receptor is determined to suffer significant cumulative effects.

Property

15.5.20 This section considers the possibility of physical damage to property, as opposed to the possible effects on commercial operations or human users. In the latter case, whilst property damage could present a pathway to

human receptors, in practice all the topics discussed below already considered effects on humans separately and so physical damage to property is considered separately.

- 15.5.21 The factors identified as potentially affecting property were dust soiling, vibration damage, ground gas build up, and aggressive ground conditions.

Air Quality

- 15.5.22 The air quality assessment in Chapter 8 considers the potential for dust soiling of property. With appropriate mitigation, no significant effects are expected at either construction or operational phases.

Noise and Vibration

- 15.5.23 The noise and vibration assessment in Chapter 10 considers the potential for vibration to damage buildings. Following mitigation, no residual vibration effects are expected during either construction or operation.

Geology and Soils

- 15.5.24 The geology and soils assessment in Chapter 11 considers the potential for damage to services and foundations of buildings; specifically railway infrastructure such as platforms and station buildings, and homes and properties within 500 m of the Project. A minor adverse risk is identified in the Bedford Borough Council sub-section due to the proximity of a landfill site that could be a source of landfill gas. All other areas were deemed neutral or minor beneficial.

Cumulative Effects

- 15.5.25 As the preceding paragraphs show, there is only one effect on property currently identified; this being risks of landfill gas to some properties in the Bedford Borough Council sub-section. As such there are not cumulative effects on property to consider.

Ecological

Ecology

- 15.5.26 The ecology assessment in Chapter 9 notes effects on wildlife sites and barn owls. However, in all cases, mitigation was deemed to reduce any adverse effects to not significant. The ecology chapter already takes into account the effects of land take, dust, noise and contamination
- 15.5.27 Potential residual effects are identified at Sheephouse Wood SSSI, Salden Wood LWS, and Waddesdon Station Complex LWS.

Air Quality

- 15.5.28 The air quality assessment in Chapter 8 considers the potential for dust soiling and NO_x and NO₂ emissions on sensitive ecological receptors, from both construction activities and construction traffic. Following mitigation, no significant effects are expected at either construction or operational phases. This will be confirmed in the Final ES, when traffic data are available.

Geology and Soils

- 15.5.29 The geology and soils assessment in Chapter 11 considers the possibility of effects on designated ecological sites; however no such effects are identified.

Cumulative Effects

- 15.5.30 As the preceding paragraphs show, whilst the ecology chapter noted a small number of residual effects, no other relevant chapters identified residual effects on ecological receptors to be considered cumulatively. As such there are no cumulative effects on ecology.

Cultural Heritage

Cultural Heritage

- 15.5.31 The cultural heritage assessment in Chapter 7 considers direct physical effects (such as disturbance on buried archaeology) and setting effects.

Following mitigation, there will be no residual significant effects on buried archaeology or earthworks. There may be large or very large adverse effects on the following receptors in Aylesbury Vale: Claydon/Quainton sub-section:

- Claydon House (LB1288461)
- Claydon Registered Park and Garden (1000597)
- Middle Claydon Conservation Area
- North Lodges (LB1214706)
- Almshouses (LB1288449)
- Townsend Cottages (LB1214764)
- K6 Telephone Kiosk (LB1288297)
- Old Post Office (LB1288425)

Landscape and Visual

15.5.32 The landscape and visual assessment in Chapter 12 considers the visual effect on viewpoints from heritage receptors, in particular:

- Grade I listed Church of St Mary (large adverse during construction; moderate adverse after one year to negligible beneficial after 15 years)
- Grade II listed The Old Rectory (large adverse during construction; moderate adverse after one year to negligible beneficial after 15 years)
- Grade II listed Manor Farm House (large adverse during construction; moderate adverse after one year to negligible beneficial after 15 years)
- Grade II* listed Tythe Barn (large adverse during construction; moderate adverse after one year to negligible beneficial after 15 years)
- Horwood House (large adverse during construction; moderate adverse after one year and slight adverse after 15 years)
- Railway Platform and Platform Buildings (large adverse)
- Boer War Memorial (slight adverse during construction)
- Moated Site Scheduled Monument (moderate adverse during construction, slight adverse after one year to neutral after 15 years)

Geology and Soils

15.5.33 The geology and soils assessment in Chapter 11 notes the potential for effects to scheduled historic monuments. However no such effects are identified.

Cumulative Effects

- 15.5.34 Whilst a range of effects were identified, there are no receptors where more than one chapter identifies an effect upon it, so there are no intra-project cumulative effects.

Landscape

Landscape and Visual

- 15.5.35 The landscape and visual assessment in Chapter 12 considers the potential effects on landscape character, considering national, regional and local character areas.

Cumulative Effects

- 15.5.36 No other assessments considers landscape as a receptor, therefore there are no intra-project effects to consider.

Controlled Waters

Geology and Soils

- 15.5.37 The geology and soils assessment in Chapter 11 considers the effects on both groundwater and surface water receptors. The effects on groundwater are mostly minor beneficial due to remediation or removal of contaminated material; effects on surface water are minor adverse during construction due to the risk of things like runoff and spills, and neutral during operation.

Water

- 15.5.38 The water assessment in Chapter 13 considers the effect of the Project on surface-water quality and flood risk. No significant residual risks are identified

Cumulative Effects

- 15.5.39 Because no significant effects were identified in the above chapters, there are no intra-project cumulative effects to consider.

Geological Resources

Geology and Soils

- 15.5.40 The geology and soils assessment in Chapter 11 considers the potential for effects on geologically designated sites, and also economic sites such as mineral safeguarding areas. No local geology sites or RIGS are present within 500 m of the Project. The Project crosses a mineral safeguarding area (sand and gravel) for 300 m to the east of Bicester and to the west of Manor Farm. The widening of the railway is considered to result in a minor sterilisation of a mineral safeguarding area, prompting a minor adverse effect.

Land Use and Agriculture

- 15.5.41 The effects considered in the land use and agriculture assessment in Chapter 6 relate to soils as an agricultural resource, rather than geology as either a mineral resource or conservation resource as considered in the Geology and Soils chapter. As such the two chapters consider different aspects of geological resources.

Cumulative Effects

- 15.5.42 Because the two chapters consider different types of geological resource, there are no common receptors to the two assessments, as such no intra-project cumulative effects are possible.

15.6 Inter-Project Effects Methodology

- 15.6.1 The key to assessing inter-project effects is identifying other relevant schemes that are being, or are likely to be, developed in the area on a timescale that interacts with the Project, during either construction or operational phases.

The assessment of inter-project effects has not been undertaken for the Draft ES (see section 15.7); however, it will be included in the final ES, when the schemes with which the Project may have interactions will be known. This section 15.6 sets out the methodology that will be followed for the assessment of inter-project effects.

Relevant Schemes

15.6.2 There are a number of other developments with which the Project may have cumulative effects at the receptors assessed in this Draft ES. To identify these schemes, a series of steps will be followed, informed by Advice note seventeen: Cumulative effects assessment³⁶³. The Project is not a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008, so there is no requirement for the assessment for the Project to adhere to the procedure set out in the Advice note. This guidance has, however, been taken into account in the preparation of this Draft ES, to show that a clear and staged approach will be taken to the assessment of cumulative effects.

- A spatial study area will be selected based on the influence of the Project for the range of environmental topics assessed. This spatial study area comprises the Local Authority areas of:
 - Cherwell District Council;
 - Aylesbury Vale District Council;
 - Milton Keynes Council;
 - Central Bedfordshire Council;
 - Bedford Borough Council; and
 - Wycombe District Council.
- A desk study will be undertaken of planning applications, development plan documents and other sources to create a 'long list' of schemes with which the Project has the potential to interact in relation to the environmental topics assessed. This search will also identify infrastructure schemes consented by other processes, such as DCOs and other TWAOs, that are being implemented;
- The 'long list' will be arranged in order of certainty of the effects they may give rise to, with 'Tier 1' being the most certain and 'Tier 3' the least certain and least likely to have publically available information to inform the assessments, as described in AN17. This will also broadly relate to how advanced each scheme is in terms of being realised; and
- A set of criteria will be applied to the 'long list' to assist in deciding whether to include or exclude certain schemes from further assessment.

³⁶³ Planning Inspectorate (2015) Advice Note Seventeen: Cumulative Effects Assessment.
<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf>

This is to ensure that the assessment focusses on those likely to give rise to significant cumulative effects only. Those schemes considered to have overlaps in temporal scope, be of a scale and/or nature likely to lead to significant effects or have other relevant factors will be taken forward for further data gathering and assessment. The consultation that will be undertaken with local authorities will also feed into the preparation of this 'short list'.

15.6.3 Detailed information will be compiled on the shortlisted schemes to inform the assessment of cumulative effects. This includes design and location information, the proposed programme of construction, operation and decommissioning (if relevant) and relevant environmental assessments setting out baseline data and effects arising from the scheme.

15.6.4 Both the 'long list' and the subsequent 'short list' will be included in an Appendix to the final ES chapter.

Rail Schemes

15.6.5 Amongst the schemes that will be identified for the assessment, there are a number of other rail schemes with which the Project may interact. The rail schemes which will be included in this chapter of the final ES are:

- The High Speed Rail 2 Phase One project (HS2 Phase One) – the Act authorising this project received Royal Assent in February 2017 ; and
- Other phases of the East West Rail programme – Phase 1 was completed in 2016 and is now operational; Central and Eastern sections of the programme are in the very early stages of the project lifecycle and are not expected to be to be constructed for a significant period of time.

15.6.6 For HS2, it will be assumed that construction of HS2 will proceed simultaneously to construction of the Project, thus these will be assessed cumulatively. The potential cumulative effects at the construction phase with HS2 include the following:

- Construction traffic using the same highway network at the same time;
- Construction activity noise and vibration from HS2 and Project where working in close proximity, effecting the same receptor;
- Visual effects from temporary works (compound and construction equipment) from HS2 and the Project where working in close proximity, effecting the same view, and

- Construction phase disturbance to the same Important Ecological Feature (IEF) from HS2 and the Project where working in close proximity.

15.6.7 These will be assessed in the final ES.

15.6.8 For the operational assessment of the Project, HS2 operation will be deemed to comprise part of the baseline, hence will not be assessed cumulatively for that phase.

Temporal scope

15.6.9 The assessment will consider developments that are:

- Currently under construction;
- Consented (in whole or in part) but not yet implemented (taking account of the fact that planning permission expires after three years);
- Submitted for consent but not yet determined; or
- Identified and safeguarded in a development plan or other Local Authority plan or programme, which are likely to progress prior to the completion of the Project.

15.6.10 Planning legislation requires that planning permission granted expires after a certain period, generally three years. Therefore, the temporal scope of the assessment will encompass approved or pending planning applications dating back three years from the final assessment commencing, as well as Local Authority development plan documents up to three years old. Where an application is for the approval of reserved matters and therefore contains relatively little information, the assessment will refer back to the original application to find information to assess for cumulative effects.

15.6.11 As set out in the Limitations and Assumptions section, the list of schemes will be finalised in August 2017 to enable the assessment to proceed in time for submission of the TWAO.

Identifying cumulative effects

15.6.12 For each scheme in the inter-project cumulative effects shortlist, the available environmental information (ES or other relevant environmental reports) will be reviewed to determine if there were any residual effects

identified to receptors that have also been assessed in the final assessments for the final ES.

Limitations and Assumptions

Availability of Sufficient Information

- 15.6.13 The assessment of cumulative effects with other schemes is widely recognised to be limited by available baseline information and relevant environmental assessments, as well as lack of compatibility of the assessments with the other schemes. Where different schemes have employed different methodologies or criteria in their assessments, difficulties in determining the interactions between effects from different schemes can arise.

Future Economic Growth Enabled by the Project

- 15.6.14 As set out in Chapter 1 (Introduction), the Project is seen as a key piece of enabling infrastructure to support and enable planned growth across the EWR corridor. The growth that is expected in the EWR corridor over the coming decades will be required whether the Project is implemented or not; however, as Chapter 1 (Introduction) explains, the growth would be much more sustainable with the introduction of a rail link through the corridor, which would then further stimulate growth.
- 15.6.15 The growth just described will have cumulative effects on the environment. It is acknowledged that the Project will have a part to play in this, though it is not possible to understand and assess such effects at this stage. To some extent such effects will be identified and assessed as part of strategic environmental assessments undertaken as part of the adoption of local authority Development Plans and Transport Plans.
- 15.6.16 In any case, at the time of this assessment there is insufficient information available about the nature, design or potential environmental impacts of this future growth for any meaningful conclusions to be drawn. Where specific schemes progress prior to the completion of the Project and they are subject to the EIA process, cumulative assessments for these schemes will take account of the contribution of the Project.

Future Changes in Rail Services

- 15.6.17 The Project is designed to deliver the required train services as set out in Chapter 2 (Project Description). Future changes to rail services using the network are outside of the scope of this assessment.

Inherently Cumulative Assessments

- 15.6.18 Certain environmental assessments inherently assess cumulative effects. For example, transport and associated assessments of vehicular emissions, such as air quality and noise, incorporate modelled traffic data which accounts for growth in future operational traffic flows. Chapter 14 (Traffic and Transport) of the final ES will describe how this is achieved.

Assessment Cut-off Date

- 15.6.19 In order to complete the assessment, the list of schemes to be considered as part of the assessment will be finalised no later than August 2017. Any schemes entering the planning system, local planning authority documents being published or other relevant developments being announced after this date will therefore not be able to be included in the assessment.

Assessment of Significance

- 15.6.20 Having identified residual effects from cumulative schemes it will then be assessed whether these combined with residual effects of the Project would lead to likely significant effects cumulative effects at the receptors. This process will use knowledge of the Project, the assessment of likely significant effects for each environmental topic and professional judgement.
- 15.6.21 As per Volume 11, Section 2, Part 5, HA 205/08 (Assessment and Management of Environmental Effects) of the DMRB, the following factors will be taken into consideration when determining the significance of inter-project cumulative effects:
- The nature of the receptors and resources affected;
 - How the activity or activities will affect the condition of the receptor or resource;

- The probabilities of such effects occurring; and
- The ability of the receptor or resource to absorb further effects before the change becomes irreversible.

Mitigation

15.6.22 Where significant inter-project cumulative effects are identified, consideration will be given to what further mitigation will be appropriate.

15.7 Inter-Project Effects Assessment

15.7.1 At this stage, the inter-project assessment has not yet been undertaken. This is because the projects that would need to be considered may change significantly between now and the submission date.

15.7.2 Only likely cumulative significant effects, which are material to the decision making process, are reported in full. Effects that are identified as having little or no significance will be mentioned only briefly in the chapter to indicate that their possible relevance has been considered. This is in line with accepted guidance on the assessment of cumulative effects as set out in Section 15.3 of this chapter.