

**A66 Northern Trans-Pennine Project
TR010062**

**3.2 Environmental Statement
Chapter 15 Cumulative Effects**

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Procedure) Regulations 2009**

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**3.2 ENVIRONMENTAL STATEMENT
CHAPTER 15 CUMULATIVE EFFECTS**

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15 Cumulative and Combined Effects

15.1 Introduction

15.1.1 Cumulative effects are those that arise as a result of impacts from more than one project, or element of a single project, combining to have an effect on a receptor, or group of receptors, that may be larger than if the effect were considered separately. They are also defined with DMRB LA 104 as:

Impacts that result from incremental changes caused by other present or reasonably foreseeable actions together with the project. (Highways England, 2020)¹

15.1.2 Combined effects are the effects of the Project arising from a number of topic areas on a particular receptor.

15.1.3 For this assessment 'the Project' refers to all schemes collectively associated with the A66 Northern Trans-Pennine project.

15.1.4 *The Design Manual for Roads and Bridges (DMRB) LA 104 Environmental assessment and monitoring (Highways England, 2020)¹ (section 3.19 – 3.22)), states that environmental assessments shall assess cumulative effects, while the Planning Inspectorate Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (2019)² sets out a staged process that applicants may wish to adopt in cumulative effects assessments for Nationally Significant Infrastructure Projects (NSIPs).*

15.1.5 This Environmental Statement (ES) chapter details the legislative context and methodology for the assessment of combined and cumulative effects. It presents the findings of the combined and cumulative effects assessments (CEA), and where required, goes on to identify any design, mitigation and enhancement measures, and any ongoing monitoring requirements. Any key assumptions and limitations applicable to the assessment are also identified.

15.1.6 This assessment is split in to two sections, an assessment of cumulative effects, and a combined effects assessment.

15.1.7 Combined effects assessment - considers the combined effects of the Project on the same receptor (for example noise, dust and visual effects from construction affecting a residential receptor adjacent to a construction compound), where these are likely to result in a new or different likely significant effect than any one of the impacts on their own.

15.1.8 Cumulative effects assessment - an assessment of cumulative environmental impacts of other projects within the Zone of Influence, in combination with the environmental impact of the Project on a single

¹ Highways England (2020) Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring]

² Planning Inspectorate (2019) Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, Version 2]

resource/receptor, where these are likely to result in a new or different likely significant effect than the Project in isolation.

15.1.9 This Environmental Impact Assessment (EIA) has been undertaken by competent experts with the relevant and appropriate experience in their respective topics. The lead author of this chapter has:

- BSc (hons) Geography
- Chartered Environmentalist and Member of the Institute of Environmental Sciences
- 10 years of experience in professional practice relating to Environmental Impact Assessment, including cumulative assessment.

15.1.10 Topic lead authors from the technical topics presented in this ES have contributed to this cumulative assessment. Their qualifications and experience are set out in the technical chapters, Chapter 5: Air Quality to Chapter 14: Road Drainage and the Water Environment, of this ES.

15.2 Legislation and policy framework

Legislation

15.2.1 Schedule 4 to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI No. 572) states that the EIA should include consideration of both the interaction between the different aspects of the environment likely to be affected by the development (Regulation 5 (2)(e)), and the likely significant effects of the development resulting from the cumulation of effects with other existing and/or approved projects (Schedule 4, Paragraph 5(e)).

National level policy

National Policy Statement for National Networks

15.2.2 The requirement to consider cumulative effects is also outlined in planning policy. The *National Policy Statement for National Networks (NPSNN)* (Department for Transport, 2014)³, paragraph 4.3 states that:

“In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:

“its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts”.

15.3 Assessment methodology

15.3.1 There is currently no industry-wide standard methodology for cumulative effects assessment, although there is a range of guidance available and *DMRB LA 104 Environmental assessment and monitoring (DMRB LA 104)* (Highways England, 2020)⁴ provides the standard for assessment of

³ Department for Transport (2014) National Policy Statement for National Networks

⁴ Highways England (2020) Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring

cumulative effects for highways schemes. The following standards and guidance have been employed in the production of the ES:

- *DMRB LA 104* (section 3.19 – 3.22), which sets out a high-level methodology for assessing cumulative effects on highways projects
- *Planning Inspectorate advice note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects (Advice note 17)* (Planning Inspectorate, 2019)
- *Planning Inspectorate advice note nine: Rochdale Envelope (Advice note 6)* (Planning Inspectorate, 2018)⁵.

15.3.2 Consistent with the distinction between combined effects and cumulative effects, as defined within *DMRB LA 104*, and outlined in section 15.1: Introduction, this assessment is split in to two sections:

- Combined effects assessment
- Cumulative effects assessment

15.3.3 The methodology for each of these assessments is described separately below.

Significance criteria

15.3.4 The significance of effects has been determined in accordance with the criteria set out in Table 15-1: Combined and cumulative effects significance, which are based on the guidance within *DMRB LA 104* Table 3.7 and expanded upon.

Table 15-1: Combined and cumulative effects significance

Significance category	Typical descriptors of effect
Very Large (Adverse or Beneficial)	Where the combined impacts of the Project or cumulative effects of the Project in association with other development upon an individual or collection of environmental receptors would be very highly significant (positive or negative). Effects would be permanent for receptors of very high value. Effects at this level are material in the decision-making process.
Large (Adverse or Beneficial)	Where the combined impacts of the Project or cumulative effects of the Project in association with other development upon an individual or collection of environmental receptors would be highly significant (positive or negative). Effects would be: <ul style="list-style-type: none"> • Permanent for a receptor or receptors of high value; • Localised for a receptor or receptors of very high value; or • Temporary for a receptor or receptors of very high value. Effects at this level are likely to be material in the decision-making process.
Moderate (Adverse or Beneficial)	Where the combined impacts of the Project or cumulative effects of the Project in association with other development upon an individual or collection of environmental receptors could be significant (positive or negative). Effects would be: <ul style="list-style-type: none"> • Permanent for a receptor or receptors of medium value;

⁵ Planning Inspectorate (2018) Advice note nine: Rochdale Envelope, Version 3]

Significance category	Typical descriptors of effect
	<ul style="list-style-type: none"> • Localised for a receptor or receptors of high value; or • Temporary for a receptor or receptors of high value. Effects at this level can be considered to be material decision-making factors.
Slight (Adverse or Beneficial)	Where the combined impacts of the Project or cumulative effects of the Project in association with other development upon an individual or collection of environmental receptors would be noteworthy but not significant (positive or negative). Effects would be: <ul style="list-style-type: none"> • Permanent for receptors of low value; • Localised for a receptor or receptors of medium value; or • Temporary for a receptor or receptors of medium value. Effects at this level are not material in the decision-making process.
Neutral	Where the combined impacts of the Project or cumulative effects of the Project in association with other development upon an individual or collection of environmental receptors would be negligible and not significant (positive or negative).

15.3.5 The value of receptors is based on the highest value attributed by the relevant environmental topic assessments. For example, if a receptor is high value for landscape and moderate value for noise, it is deemed to be high value for the purpose of the cumulative and combined assessment. Similarly, if the overall significance of effect determined using the criteria in Table 15-1: Combined and cumulative effects significance is lower than that assigned within the individual topic assessments, then the highest level of effect is reported in this assessment.

15.3.6 Effects which are moderate, large or very large are deemed to be significant.

Combined effects assessment methodology

15.3.7 A review of the assessments reported in Chapter 5: Air Quality to Chapter 14: Road Drainage and the Water Environment (and their associated appendices reporting non-significant and significant environmental effects) was undertaken to identify new or different environmental effects, or those which may result in effects of greater significance than those arising from any one impact in isolation.

15.3.8 Combined effects from the action of a number of different effects impacting upon a single resource/receptor are considered within each of these chapters where they are relevant. These chapters consider the range of effects that could affect their relevant receptor groups, and therefore present a combined effects assessment for those receptors. The topic chapters also consider the combined effects of climate change on their receptors and the effects of the Project, to identify whether the effects of climate change could exacerbate or change the effects that have been considered within the assessment.

15.3.9 The combined effects identified are summarised in section 15.4:
 Assessment of combined effects.

Cumulative effects assessment methodology

15.3.10 PINS *Advice note 17* provides a systematic approach to cumulative effects assessment which can be split into four distinct phases explained in Table 15-2: Stages of cumulative effects assessment. Paragraph 2.5 of the guidance notes that the recommended process focusses on cumulative effects with 'other existing development and/or approved development'.

Table 15-2: Stages of cumulative effects assessment

Stage	Activity
Stage 1: Establishing the long list of 'other existing development and/or approved development'	<ul style="list-style-type: none"> • identify the ZOI (defined below) for each of the environmental topics • identify a long list of 'other existing developments and/or approved developments' in the vicinity of the project which may have cumulative effects • undertake desktop review of available environmental information for identified other existing and/or approved developments • Assign certainty to 'other existing developments and/or approved developments' using the tier system as described in Table 15-4.
Stage 2: Identify short list of 'other existing development and/or approved development'.	<ul style="list-style-type: none"> • establish which of the identified 'other existing development and/or approved development' from Stage 1 have the potential to give rise to significant cumulative effects by virtue of overlaps in temporal scope, the scale and nature of the 'other existing development and/or approved development' and receiving environment; and any other relevant factors. • As noted in <i>Advice Note 17</i> section 3.2 Establishing a shortlist of 'other existing development and/or approved development' - Professional judgement may also be used to supplement the threshold criteria and in order to avoid excluding 'other existing development and/or approved development' that is: <ul style="list-style-type: none"> ○ Below the threshold criteria limits but has characteristics likely to give rise to a significant effect; or ○ Below the threshold criteria limits but could give rise to a cumulative effect by virtue of its proximity to the proposed NSIP.
Stage 3: Information gathering	<ul style="list-style-type: none"> • information related to the shortlisted cumulative developments is gathered and reviewed
Stage 4: Assessment	<ul style="list-style-type: none"> • cumulative effects assessment of shortlisted other existing and/or approved development is undertaken. Each individual 'other existing development and/or approved development' is reviewed in turn to identify

Stage	Activity
	whether there is potential for significant cumulative effects <ul style="list-style-type: none"> mitigation measures are identified where required.

Stage 1 Establishing the ZOI and longlist of 'other existing development and/or approved development'

Establishing the zone of influence

15.3.11 The ZOI refers to the spatial area over which an effect from a project is likely to be experienced. The ZOI for the Project varies for each environmental factor and is set out in the study area for each environmental factor assessment, shown in ES Figure 15.1: Cumulative zones of influence (Application Document 3.3) and described in Table 15-3 Cumulative assessment zone of influence by topic below.

15.3.12 As part of Stage 1, a ZOI was established for each environmental topic. Table 15-3 Cumulative assessment zone of influence by topic presents the ZOI extent by each environmental factor. Figure 15.1: Cumulative Zones of Influence (Application Document 3.3) shows the areas adopted for each of the environmental topic ZOIs. An overall combined ZOI representing a search area around the Order Limits was defined comprising a 2km buffer from the Order Limits within which an 'other existing development and/or approved development' has been identified and a further search of major developments requiring Environmental Impact Assessment (EIA) at a distance of greater than 2km but less than 5km from the Order Limits was also included. The Order Limits include the land required temporarily and/or permanently for the construction, operation and maintenance of the project, including environmental mitigation.

15.3.13 The air quality and noise assessments draw upon traffic data derived from an inherently conservative regional model in that it already includes allowance for future developments (collated from planning application data and strategic development within local plans) considered 'near certain' or 'more than likely', as defined by Transport Analysis Guidance: WebTAG (Department for Transport, 2017)⁶. These developments inform the traffic model. Therefore, the air quality and noise assessments for the operation phase presented in the topic chapters are inherently cumulative in respect of those developments. The WebTAG approach is wider than that specified in Planning Advice Note 17 under the tiered approach and therefore includes all the developments considered within the cumulative assessment.

15.3.14 These air quality and noise assessments are therefore comprehensive and include a worst case within the defined assessment parameters, such that no additional cumulative assessment of these aspects is required. Consideration of in-combination of these effects on an individual set of receptors e.g. as part of a socio-economic assessment has been undertaken within the relevant chapters to the receptor.

⁶ Department for Transport (2017) Transport Analysis Guidance: WebTAG]

- 15.3.15 For the materials and waste assessment, the estimated materials availability and waste capacity data used in Chapter 11: Material Assets and Waste (Application Document 3.2) are based on future regional demand and so the assessment is considered to be inherently cumulative. No separate cumulative assessment has therefore been undertaken.
- 15.3.16 Climate impacts (that is those as a consequence of global heating) are observable at a national and global scale. Assessment of significance is based on whether the increase in global Greenhouse Gas (GHG) emissions represent a significant contribution to global atmospheric GHG concentrations in the context of national carbon budgets.
- 15.3.17 For the Climate Change Risk (CCR) assessment the receptor under assessment is the Project, and there are no receptors in common with other cumulative projects/assessments. Risks arising from drainage and flood risk management are considered the only potential area where cumulative development may increase risk to the Project, but this is considered adequately mitigated through the Flood Risk Management regime.
- 15.3.18 The approach to the assessment of cumulative effects arising from GHG emissions is incorporated into the methodology for appraising emissions from construction and operation as set out in DMRB LA 114 Climate (DMRB LA 114) (Highways England, 2021)⁷. The assessment of cumulative GHG emissions cannot be carried out in a process analogous to other environmental topics because there is no causal link between the location of GHG emissions and the impacts arising from the cumulative aggregation of GHGs in the atmosphere. This limitation has also been recognised in the recent update to guidance on the assessment of GHG emissions produced by IEMA. Because of this limitation - and because it is necessary to consider GHGs in the context of a scientifically based trajectory compliant with the planetary limits for GHG emissions - the best available comparison benchmark are the carbon budgets adopted by the UK. These provide a series of five-yearly budgets within which the UK must stay in order to remain on track to achieve Net Zero by 2050.
- 15.3.19 The net GHG impacts of the Project have been assessed and reported within the context of national carbon budgets. The approach to climate assessment within the methodology set out in DMRB LA 114 is inherently cumulative through the inclusion of the Project and other locally committed development within the traffic model on which the GHG emissions calculations is based, and through the consideration of the Project against the UK carbon budgets. The assessment of construction stage emissions is based on design data and estimates of construction activity. The assessment of operational emissions is based on the validated traffic model for the Project (as directed by DMRB LA 114). These are then presented in the context of the national carbon budgets for the periods where budgets have been set. The total emissions are presented in the context of the relevant carbon budget period in which they are expected to

⁷ Highways England (2021) Design Manual for Roads and Bridges LA 114 Climate

fall. No separate cumulative assessment has therefore been undertaken on GHG emissions.

Table 15-3 Cumulative assessment zone of influence by topic

Environmental Topic	Zone of Influence
Air quality	Construction: The ZOI extends 200m from the Order Limits. Operation: As the operational phase traffic data includes traffic associated with other developments, the air quality impact assessment reported in the ES is inherently cumulative.
Biodiversity	Construction and Operation: The overarching biodiversity ZOI extends 2km from the Order Limits. However, within this, the ZOI for assessment purposes varies according to specific biodiversity receptors and is informed by best practice guidance from Natural England and the Chartered Institute of Ecology and Environmental Management and other sources. As the operational phase traffic data includes traffic associated with other developments, the nitrogen deposition impact assessment reported in this ES is inherently cumulative.
Cultural heritage	Construction and Operation: The ZOI extends 2km from the Order Limits.
Geology and soils	Construction and Operation: The ZOI extends 250m from the Order Limits for geology and soils. The ZOI extends 1km from the Order Limits for groundwater and surface waters. The ZOI for geology and soils set out during scoping was 2km, following review of potential source - receptor linkages no significant sources of contamination were identified within 2km. For this reason the ZOI was reduced to 250m.
Landscape and visual	Construction and Operation: The ZOI extends 2km from the Order Limits for visual receptors. Beyond this, any other development in combination with the project will be unlikely to give rise to any significant effects on visual receptors due to the distance reducing the perceived scale and massing of the built elements and associated operational elements (i.e. the traffic moving along the road); and the screening from intervening landform and vegetation. Professional judgement, informed by the Zone of Theoretical Visibility (see Chapter 10: Landscape and Visual Effects) has been used to consider potential cumulative effects on higher sensitivity landscape and visual receptors extending to 7km or more from the Order Limits where judgement suggests a significant effect is possible.
Noise and vibration	Construction: The ZOI extends 300m from the Order Limits. Operation: As the operational phase traffic data includes traffic associated with other developments, the noise and vibration impact assessment reported in this ES is inherently cumulative.
Population and human health	Construction and Operation: The ZOI extends 500m from the Order Limits. Extension of the ZOI beyond 500m from the Order Limits has been necessary to capture potential impacts to receptors beyond the ZOI boundary (i.e. where changes to land use and accessibility or health determinants are identified outside this area (e.g. due to impacts identified by other EIA topics)).
Road drainage and the water environment	Construction and Operation: The ZOI extends 1km from the Order Limits for surface water and groundwater features. This is based on the 'source-pathway-receptor' pollutant linkage principle.


15.3.20 Whilst the methodology defined for the ZOI for landscape and visual effects included consideration of potential for significant effects to a distance of

7km (or more) from the Order Limits, the ZTV analysis and onsite fieldwork subsequently completed (presented in Appendix 10.3: Study Area (Application Document 3.4)) confirmed that the visibility of the Project (to an extent where a significant visual or landscape effect is possible) is limited to 2km from the Order Limits, due to the surrounding landform and vegetation. The search area for cumulative developments was therefore reduced to 5km and the consideration of cumulative landscape and visual effects focussed on the area within 2km. Cumulative developments between 2km and 5km from the Order Limits were considered only where they were of a significant scale that they could be visible to this distance (i.e. EIA development and Nationally Significant Infrastructure Projects (NSIP) only). See Appendix 10.1: Landscape and Visual Policy and Consultation Tables (Application Document 3.4) for a summary of the scoping opinion and consultation responses, as related to Landscape and Visual effects.

[Establishing the long list of 'other existing development and/or approved development'](#)

- 15.3.21 The PINS Advice note 17 recommends that a wide range of future projects is included within the cumulative effects assessment which can be tiered (from Tier 1 to 3) according to how far advanced the development is within the planning system and to the level of detail that is likely to be available for each tier. The tiers are set out in Table 15-4: Project tiering to assign certainty for the purpose of CEA (as provided in Table 2 within *Advice note 17*)
- 15.3.22 It should be noted that whilst the tiers set out below focus on Nationally Significant Infrastructure Projects, the same approach can be and is applied to planning applications under other planning regimes (e.g. Town and Country Planning Act 1990 (TCPA)). In respect of applications under the TCPA, information can be and has been obtained via the Planning Portal for projects that are in the planning process, consented or under construction. Less information is often available for those projects that are in the public domain but not yet in the planning process.

Table 15-4: Project tiering to assign certainty for the purpose of CEA (as provided in Table 2 within *Advice note 17*)

Tier	Description	
Tier 1	<ul style="list-style-type: none"> Projects under construction Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented Submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined 	Decreasing level of detail likely to be available. 
Tier 2	<ul style="list-style-type: none"> Projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted 	
Tier 3	<ul style="list-style-type: none"> Projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted Development identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals would be limited Development identified in other plans and programmes (as appropriate) which set the framework for future development consents and approvals, where such development is reasonably likely to come forward 	

15.3.23 The less information that is available for the future projects (for example environmental impacts predicted, project definition), the less likely that the cumulative effects assessment will be able to make a robust assessment in relation to these projects. Where an 'other existing development and/or approved development' falls into Tier 3, further investigation of project details was undertaken. Where detail was not available to carry out a robust assessment, these developments have not been assessed any further.

15.3.24 Where 'other existing development and/or approved development' are expected to be completed before construction of the project and the effects of those 'other existing developments and/or approved developments' are understood, those effects will be considered within the ES as part of the future baseline within environmental topics and will therefore be included as part of both the construction and operational assessment.

15.3.25 As part of Stage 1, relevant 'other existing developments and/or approved developments' have been identified through a combination of consultation with relevant planning authorities and directly from published sources. Relevant planning authorities within 5km of the Order Limits were included.

15.3.26 Information on planning applications and local plan allocations has been gathered from the following data sources:

- The Planning Inspectorate (for *NSIP applications* (Planning Inspectorate, 2012)⁸)
- The Department for Transport (for *Transport and Works Act Order applications* (Department for Transport, 2013)⁹)

⁸ Planning Inspectorate (2012) National Infrastructure Planning]

⁹ Department for Transport (2013) Transport and Works Act (TWA) applications and decisions,]

- Cumbria County Council
- Durham County Council
- Eden District Council
- North Yorkshire County Council
- Richmondshire District Council.

15.3.27 The above planning authorities were contacted in July 2021 and January 2022 to identify development proposals within the ZOI (2km buffer around the Order Limits and up to 5km for major developments requiring EIA) that could potentially generate cumulative effects with the Project. Information was requested on planning applications received within five years preceding the date of the request. Most planning permissions will include a condition requiring their implementation within three to five years from the date they were issued. Therefore, it is possible that any project that has been granted planning permission in the last three to five-year period would remain capable of being implemented at the point the list was compiled.

15.3.28 Where full datasets were not received from planning authorities, searches were undertaken of the relevant Planning Portal website for North Yorkshire County Council (North Yorkshire County Council, 2022)¹⁰ and Richmondshire County Council (Richmondshire County Council, 2022)¹¹ to identify potential developments within 5km of the Order Limits.

15.3.29 A search of the nationally significant infrastructure planning website was also undertaken to identify proposed NSIPs within 5km of the Order Limits.

15.3.30 The wider National Highways *Road Investment Strategy 2* (Department for Transport 2020)¹² (RIS2) programme also has the potential to lead to cumulative effects on the wider Strategic Route Network. All RIS2 schemes within the north are included within the transport model used for the Project, therefore as set out in section 15.2: Legislation and policy framework, the Air Quality, Noise, Climate and Materials and Waste assessments reported within this ES already include consideration of those proposed schemes. There are no RIS2 schemes in close enough proximity to the Project to have a cumulative effect other than through changes to traffic movements.

15.3.31 The planning application data was initially screened through a filtering process to remove the following:

- Any planning applications older than five years (i.e. dating from prior to February 2017 for the January 2022 data checks)
- Small scale applications that would not be expected to give rise to significant effects, or contribute to significant cumulative effects, for example:
 - Construction of small-scale agricultural buildings
 - House extensions or cosmetic changes to buildings
 - Micro-generation wind turbines
 - Roof mounted solar PV panels

¹⁰ North Yorkshire County Council (2022) Online Planning Register

¹¹ Richmondshire County Council (2022) Public Access Portal.

¹² Department for Transport (2020) Road investment strategy: 2020 to 2025

- Renewal of planning permission for retention of existing operational use
- Tree works
- Listed building applications
- Withdrawn applications
- Dismissed appeals
- Refused applications where the opportunity for appeal has passed (six months)
- Prior notification (Notice of Intention) applications
- Non-material amendments
- Discharge or variation of conditions.

Stage 2 identify shortlist of 'other existing development and/or approved development'

15.3.32 The 'long list' of other developments identified under Stage 1 has been subject to further threshold criteria to identify a proportionate list of developments for assessment within the CEA.

15.3.33 The threshold criteria considered in shortlisting a development is outlined in Table 15-15-5: Criteria for shortlist of 'other existing development and/or approved development'. Criteria has come from PINS guidance within *Advice note 17* and the EIA Regulations 2017.

15.3.34 Professional judgement has been applied to 'other existing developments and/or approved developments' that exceed the thresholds but do not give rise to discernible effects. Where relevant, the reasons for excluding any 'other existing development and/or approved development' from further consideration is outlined in Appendix 15.1: Consideration of cumulative effects (Application Document 3.4).

15.3.35 Each of the developments and allocations in the longlist identified under Stage 1 have been considered in terms of whether they are likely to generate impacts which could combine to result in cumulative effects in combination with the Project using the criteria outlined in Table 15-15-5: Criteria for shortlist of 'other existing development and/or approved development', which has been adapted from the Planning Inspectorate guidance and the EIA Regulations 2017.

Table 15-15-5: Criteria for shortlist of 'other existing development and/or approved development'

Threshold	Description
The temporal scope of 'other existing development and/or approved development' potential for interaction.	Consideration of relative construction, operation and decommissioning programmes of the 'other existing development and/or approved development' identified in the ZOI with the Project programme, to establish whether there is overlap, or similar temporal scope for construction and operation phases, and any potential for interaction.
The scale and nature of "other existing development and/or approved development"	Consideration of whether the scale and nature of the 'other existing development and/or approved developments' identified in the ZOI are likely to interact with the Project and to result in a cumulative effect;

Threshold	Description
	<p>Characteristics of 'other existing developments and/or approved developments' in relation to impacts to sensitive receptors, use of natural resources, pollution and nuisances, and risks to human health;</p> <p>The scale of developments which are more than 1 hectare of urban development which is not a dwelling development; or</p> <p>The development includes more than 150 dwellings; or</p> <p>The overall area of the development exceeds 5 hectares.</p> <p>Where an 'other existing development and/or approved development' is between 2km and 5km from the Order Limits these criteria do not apply, and a development will only be included if it requires an environmental impact assessment, or using professional judgement.</p>
Any other relevant factors	<p>Nature and/or capacity of the receiving environment that would make a significant cumulative effect with 'other existing development and/or approved development'. The sensitivity of the receiving environment includes whether the sites are within:</p> <ul style="list-style-type: none"> a) known species locations b) wetlands, riparian areas, river mouths c) coastal zones and the marine environment d) mountain and forest areas e) nature reserves and parks f) European sites and other areas classified or protected under international and national legislation g) areas in which there has already been a failure to meet the environmental quality standards, laid down in European Union legislation and relevant to the project, or in which it is considered that there is such a failure h) densely populated areas i) landscapes and sites of historical, cultural, geological or archaeological significance. <p>The relative abundance, availability, quality and regenerative capacity of natural resources in the area.</p> <p>Potential for creation of source-pathway-receptor impacts.</p>

15.3.36 The longlist has been reviewed by each technical topic in relation to the relevant ZOI to identify 'other existing developments and/or approved developments' which have the potential to result in cumulative effects with the project. Generally, only 'other existing developments and/or approved developments' where an EIA is required are considered appropriate for inclusion in the cumulative assessment but topics have considered all of the factors in Table 15-15-5: Criteria for shortlist of 'other existing development and/or approved development'.

15.3.37 Stakeholders and local authorities had the opportunity to comment on the methodology of the cumulative assessment at both scoping and during statutory consultation, no concerns were raised.

Stage 3 information gathering

15.3.38 In line with *Advice Note 17*, the following information on the 'other existing developments and/or approved developments' shortlisted has been

compiled from publicly available information as outlined under ‘Stage 1’ above:

- *"proposed design and location information;*
- *proposed programme of construction, operation and decommissioning; and*
- *environmental assessments that set out baseline data and effects arising from the ‘other existing development and/or approved development’”.*

15.3.39 In addition to this the following information on ‘other existing developments and/or approved developments’ has been compiled:

- name of the applicant (either termed as 'Individual' for a private person, or a company name);
- distance from the Order Limits of the Project in metres; and
- status of the application.

Stage 4 assessment

15.3.40 The assessment of significance of the cumulative effects is determined in accordance with the significance assessment as detailed within Chapter 4: Environmental Impact Assessment Methodology.

15.3.41 For the purposes of the CEA, the value of a resource and magnitude of impact is determined according to the criteria set within the preceding environmental topic chapters of this ES: Chapters 5-14. The significance of effect is then carried forward from preceding chapters to identify the significance of cumulative effects with other developments.

15.3.42 The significance criteria for cumulative effects has been derived from guidance set out within *DMRB LA 104*. This is set out in Table 4.3 of Chapter 4: Environmental Impact Assessment Methodology and is used in the assessment of effects in section 15.5: Assessment of cumulative effects.

15.3.43 Where significant cumulative effects beyond those identified as residual significant effects from the Project in isolation are identified, an assessment of the need for additional mitigation (further to that already set out in the preceding ES chapters: Chapter 5: Air Quality to Chapter 14: Road Drainage and the Water Environment) is undertaken.

15.3.44 The assessment of cumulative effects varies depending on each environmental factor’s individual assessment criteria and thresholds for significant effects.

15.4 Assessment of combined effects

15.4.1 The following receptors have been identified and are divided into six groups based on a review of the various assessments to determine where multiple factors might affect the same receptor type, as set out in Appendix 15.3: Assessment of Combined Effects between topics (Application Document 3.4):

- Human receptors in proximity to the works - Local residential properties and recreational resources (including PRoW) could

experience multiple adverse/beneficial impacts associated with changes to views, light pollution, air pollution and noise and vibration during construction and operation. This may have implications to human health.

- Ecological designated sites (SACs, SSSIs, and county level designations) and priority habitats - These designations could be affected by direct habitat loss, fragmentation, disturbance from changes to noise and human activity, changes to water quality and flow regimes and air quality impacts.
- North Pennines AONB - This landscape designation could experience multiple effects as a result of changes to setting, changes to the local biodiversity and habitats and changes to noise affecting the tranquillity and setting of the AONB.
- Agricultural Land - Changes to the area as a result of changes to water regimes, air quality, noise and disturbance could all have an impact on the agricultural land surrounding the project. In addition, requirements for habitat creation and changes to the local ecosystem may affect the viability of a land holding
- Designated heritage features - Changes to the value of cultural heritage receptors through changes to their setting through impacts to views, light pollution, air pollution and noise and vibration during construction and operation in addition to any direct impacts as a result of the Project
- Protected species - Changes to air quality, noise and human activity can impact on the behaviour of protected species. In additions, impacts to habitats through direct loss or degradation can cause severance of populations

15.4.2 Table 15-6: Combined effects as assessed and reported in environmental factor Chapters provides a summary of the potential combined effects which have been identified as part of the assessments reported within the relevant environmental factor chapters of the ES:

- Chapter 6: Biodiversity
- Chapter 8: Cultural heritage
- Chapter 9: Geology and Soils
- Chapter 10: Landscape and visual effects
- Chapter 13: Population and human health
- Chapter 14: Road drainage and the water environment.

15.4.3 These describe the potential impacts that are considered likely to affect a single resource or receptor. The assessment of the effects of these combined impacts are set out in the relevant chapters. No additional combined effects have been identified that are not already considered within Chapter 5: Air Quality to Chapter 14: Road Drainage and the Water Environment of the ES. Also see Appendix 15.3: Assessment of Combined Effects between topics (Application Document 3.4).

Table 15-6: Combined effects as assessed and reported in environmental factor Chapters

Environmental factor and scope of combined effects assessed within ES chapter
Chapter 6: Biodiversity considers the combined ecological effects on single receptors of a number of individual environmental impacts such as area of land required, disturbance due to noise,

Environmental factor and scope of combined effects assessed within ES chapter

changes in air quality and airborne dust deposition, surface run-off and pollution events and cumulative loss of certain habitat types.

Chapter 7: Climate change Each topic chapter considers the combined climate change impacts of the Project, where the focus is on those effects of the Project that have been identified by an environmental factor that is also affected by climate change. This is sign-posted in Chapter 7: Climate but the assessment is included within each of the other topic chapters.

Chapter 8: Cultural heritage considers effects from different sources on heritage assets, such as visual and noise impacts affecting the setting and public enjoyment of a heritage asset.

Chapter 9: Geology and Soils considers effects on soils and geology from the perspective of agricultural viability and pollution potential taking into account factors such as water quality and changes to habitats.

Chapter 10: Landscape and visual effects considers effects on landscape and visual receptors from different sources such as ecological and noise effects..

Chapter 13: Population and human health considers the conclusions of other environmental factors such as changes in traffic, severance, air quality, landscape, visual and noise impacts in the assessment of amenity impacts to community assets such as residential property, recreation infrastructure and existing businesses. The human health assessment also considers a wide range of environmental factors such as air quality, noise and visual amenity in assessing impacts on health determinants.

Chapter 14: Road drainage and the water environment considers combined effects such as the accumulation of impacts on water resources and receptors such as rivers and aquifers, which when considered together constitute a more significant effect.

15.5 Assessment of cumulative effects

15.5.1 Each ES chapter provides a summary of the significant effects of the Project (as assessed within each ES chapter) and these are also presented in Chapter 16: Summary (Application Document 3.4).

Identification of other developments to be assessed

15.5.2 For each identified 'other existing development and/or approved development', consideration has been made as to the likelihood that any impacts from the other development could occur at the same time as the Project or affect similar receptors or resources. Appendix 15.1: Consideration of cumulative effects (Application Document 3.4) presents the list of other developments identified along with justification for those screened out of the assessment.

15.5.3 The long list of developments is given in Appendix 15.1: Consideration of cumulative effects (Application Document 3.4). The number of developments to be considered within each environmental factor has been condensed between the Stage 1 and Stage 2 assessments using the criteria listed in Table 15-15-5: Criteria for shortlist of 'other existing development and/or approved development'.

15.5.4 Appendix 15.2: Cumulative Assessment (Application Document 3.4) provides the shortlist of development projects used for this CEA including the assessment of cumulative effects and Figure 15.2: Cumulative

developments (Application Document 3.3) shows the location of each development in relation to the Project.

Significance of cumulative effects including necessary mitigation and residual effects

15.5.5 Cumulative effects have been identified by considering whether:

- there would be any change in magnitude of the significant effects from the Project, as identified within the environmental factor assessments, taking into consideration any impacts from the other developments. *For example, a moderate adverse significant effect becoming a large adverse significant effect; or*
- the impacts of the Project on key receptors in combination with impacts potentially associated with 'other existing developments and/or approved developments', would trigger a significant effect where the impacts of the scheme by a project in isolation would not, *i.e. a non-significant effect becoming a significant effect.*

15.5.6 Where available, the relevant environmental information submitted for each development have been reviewed to inform the assessment.

Air quality

15.5.7 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments (Application Document 3.3) displays the location of each other development.

15.5.8 Where a 'other existing development and/or approved development' has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

Developments: 20/00067/DIS, 19/0272, 20/0013, 14/0405, 19/0426, Eden County Council LDP Housing Allocation E3 and Eden County Council LDP Housing Allocation E4

15.5.9 Cumulative effects due to construction traffic from the proposed developments, if they occur at the same time as the Project, as well as dust and PM10 generated by construction activities, could lead to significant adverse effects if adequate mitigation is not implemented.

15.5.10 Construction phase effects can be mitigated through the implementation of industry 'best practice' measures for all developments. This would include measures to limit the generation of dust and PM10, development of a Construction Environmental Management Plan (CEMP) and Traffic Management Plan (TMP) for the proposed development. The EMP (Application Document 2.7) sets out the measures to be implemented for the Project.

15.5.11 Communication between the construction contractors for the committed developments and the Project will be required to ensure on-site activities are coordinated and potential cumulative effects avoided, where possible.

Vehicle timings and routes for traffic arriving and egressing from the site should be planned to limit congestion. Construction vehicles should be routed away from the centre of Penrith and any receptor locations where the Project is predicted to result in a significant effect, as set out in Chapter 5: Air Quality. These measures are referenced in the Environmental Management Plan (EMP) (Application Document 2.7), EMP Annex B14 Construction Traffic Management Plan (Application Document 2.7) and EMP Annex B10 Construction Workers Travel and Accommodation Plan (Application Document 2.7).

15.5.12 Cumulative effects of the resultant traffic changes from the operational project and other cumulative developments are incorporated into the assessment in Chapter 5: Air quality and are therefore not assessed further.

15.5.13 With the implementation of best practice measures, cumulative effects upon air quality are not anticipated, and there would be no change to the significance of effects reported in the Chapter 5: Air quality.

Development 20/00585/FULL

15.5.14 The development is over 200m from the boundary of the Stephen Bank to Carkin Moor scheme, thus combined construction dust impacts are not anticipated.

15.5.15 Cumulative effects due to construction traffic from the proposed developments, if they occur at the same time as the Project, as well as dust and PM10 generated by construction activities, could lead to significant adverse effects if adequate mitigation is not implemented. The EMP (Document Reference 2.7) will ensure that adequate mitigation is in place.

15.5.16 The impact of operational traffic associated with the permitted development has been accounted for in the Project's opening year (DM and DS) traffic data.

15.5.17 No additional mitigation measures are required.

Biodiversity

15.5.18 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments (Application Document 3.3) displays the location of each other development.

15.5.19 Where a 'other existing development and/or approved development' has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

Development DM/16/03310/FPA

15.5.20 The development site is relatively small in extent and is not located in close proximity to the Project (Cross Lanes to Rokeby Scheme - approximately 2km). There are no functionally linked habitats or potential impact

pathways identified between the development site and the Project. Furthermore, supporting material to the development (DM/16/03310/FPA) concluded that the mitigation measures and site enhancement measures set out would ensure any significant ecological impacts would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Cumulative effects on biodiversity as a result of this development are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Development 20/00067/DIS

15.5.21 No sensitive ecological receptors have been identified in relation to the proposal 20/00067/DIS. Consequently, it is considered cumulative effects on biodiversity as a result of the development are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Development 20/00585/FULL

15.5.22 The development site is relatively small in extent and is not located within the Order Limits or the immediate surrounding area (approximately 500m from the Stephen Bank to Carkin Moor scheme). There are no functionally linked habitats or potential impact pathways identified between the development site and the Project. Furthermore, supporting material for the development (20/00585/FULL) concluded that the mitigation measures and site enhancement measures set out would ensure any significant ecological effects would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of this development are not anticipated and there would be no change to the significance of effects reported in the ES Chapter 6: Biodiversity.

Development 14/0405

15.5.23 The development site is relatively small in extent and is not located in close proximity to the Project (approximately 1.6km from M6 Junction 40 to Kemplay Bank scheme). There are no functionally linked habitats or potential impact pathways identified between the development site and the Project. Furthermore, supporting material to the development (14/0405) concluded that the mitigation measure set out would ensure any significant ecological effects would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of development 14/0405 are not anticipated and there would be no change to the significance of effects reported in the ES Chapter 6 Biodiversity.

Development 19/0272

15.5.24 The site is relatively small in extent with approximately 0.17ha (15%) of the total 1.1ha site located within the Order Limits at the Temple Sowerby to

Appleby scheme. Supporting material to the development (19/0272) concluded that the mitigation measures set out would ensure any significant ecological effects would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Potential adverse impacts on the River Eden SAC as a result of the development were also considered to be negligible. Consequently, it is considered cumulative effects on biodiversity as a result of development 19/0272 are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Development 19/0426

15.5.25 Supporting material to the development concluded that the mitigation measures set out would ensure any significant ecological impacts would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of development are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Development 20/0013

15.5.26 The Screening Opinion provided in 2020 concluded that there are no anticipated significant effects on biodiversity as a result of the development and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of development 20/0013 are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Development 20/0094

15.5.27 The proposed restoration project is not located in close proximity to the Project (approximately 1.6km east of the Temple Sowerby to Appleby scheme). The supporting material to the proposed restoration has not identified significant adverse impacts on ecological receptors as the result of the works. Furthermore, ecological receptors would be positively impacted as a result of the restoration works. Consequently, it is considered cumulative effects on biodiversity as a result of development 20/0094 are not anticipated and there would be no change to the significance of effects reported in the Chapter: 6 Biodiversity.

Development 20/0312

15.5.28 Supporting material to the development 20/0312 concluded that the mitigation measures set out would ensure any significant ecological impacts would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of development 20/0312 are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Eden County Council LDP Housing Allocation E3

15.5.29 Supporting material to the development EDC/HA3 concluded that the mitigation measures set out would ensure any significant ecological impacts would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of development EDC/HA3 are not anticipated and there would be no change to the significance of effects reported in the Chapter 6: Biodiversity.

Eden County Council LDP Housing Allocation E4

15.5.30 Supporting material to the development EDC/HA1 concluded that the mitigation measures set out would ensure any significant ecological impacts would be avoided or mitigated and that there would be no cumulation of non-significant effects that would result in a significant effect. Consequently, it is considered cumulative effects on biodiversity as a result of development pursuant to allocation EDC/HA1 are not anticipated and there would be no change to the significance of effects reported in the Chapter 6 Biodiversity.

15.5.31 No additional mitigation measures are required.

Climate

15.5.32 A review of hazards and risks identified as part of the main CCR assessment concludes that the only potentially significant cumulative risk would arise from changes to drainage and/or hydrology in the vicinity of the Project, thereby leading to a change in flood risk. However it is considered that this is effectively managed through the Flood Risk Management requirements for both the Project, and for any relevant cumulative projects, effectively mitigating the risk of a cumulative CCR risk. On this basis the cumulative CCR assessment concludes no significant impacts.

15.5.33 With regards to the ICCI assessment, any cumulative effects arising have been addressed within the relevant topic chapter.

15.5.34 No additional mitigation measures are required.

Cultural Heritage

15.5.35 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments (Application Document 3.3) displays the location of each other development.

15.5.36 Where a 'other existing development and/or approved development' has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

Development 20/00585/FULL

15.5.37 There is no impact on common non-designated assets. There is potential cumulative effect on the setting of numerous Listed Buildings (LBs) in

Ravensthorpe village which could alter the effect from neutral to a negligible/slight adverse cumulative effect.

Development 19/0426

15.5.38 There is no impact on non-designated resources. Potential cumulative effect on the setting of four LBs Cross Keys PH (02-0008), Candia (01-0144), Former Frenchfield Farmhouse (02-0017) and Former outbuildings and cattleshed at rear of Frenchfield Farm (02-0027). There is a potential cumulative the effect on the setting of these LBs elevating current effect from neutral to a negligible/slight adverse cumulative effect.

Developments 20/0013, 20/0312

15.5.39 There is no impact on non-designated resources. There is potential cumulative effect on the setting of LBs at Appleby Station (0405_887, 0405_88 and 0405_89) which could alter the effect from neutral to a negligible/slight adverse cumulative effect.

Eden County Council LDP Housing Allocation E3

15.5.40 There is no impact on non-designated resources. There are potential cumulative effects on setting of four LBs Cross Keys PH (02-0008), Candia (01-0144), Former Frenchfield Farmhouse (02-0017) and Former outbuildings and cattleshed at rear of Frenchfield Farm (02-0027), which could alter the effect from neutral to a negligible/slight adverse cumulative effect.

Eden County Council LDP Housing Allocation E4

15.5.41 There is potential for archaeological remains within the Order Limits to extend into the development site. In this case the impact on the resource would increase in extent, though this would not alter the effect on buried archaeological remains; this derives from the value of resource. The potential cumulative effect on setting of Carleton Hall Farmhouse (LB) (02-0009) elevates the current effect from Neutral to a negligible/slight adverse cumulative effect.

Summary of mitigations

15.5.42 No mitigation is proposed for impacts resulting from changes to the setting of Listed Buildings. Mitigation against impacts on the setting of Listed Buildings from cumulative developments would be secured through conditions under the Town and Country Planning Act therefore it can be considered that there would not be any significant effects arising.

15.5.43 It is considered that there would be no change to the significance of effects reported in the Chapter 8 Cultural Heritage.

15.5.44 No additional mitigation measures are required.

Geology and soils

15.5.45 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments

(Application Document 3.3) displays the location of each other development.

15.5.46 Where a 'other existing development and/or approved development' has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

15.5.47 Developments 20/00067/DIS, 19/0272 and Eden County Council LDP Housing Allocation E3 and E4 are expected to have a negligible adverse effect.

15.5.48 Measures contained within the EMPs of each development, with regards to geology and soils would prevent mitigate the risk of contaminants arising from construction and therefore any risk of cumulative effect.

15.5.49 No additional mitigation measures are required.

Landscape and visual effects

15.5.50 The potential cumulative effects on the landscape and visual impact assessment relate to the intervisibility of potential developments. This has been assessed in Chapter 10: Landscape and Visual in two ways:

- An overlapping ZTV analysis based on the DSM with vehicle height at 4.7m to show where, in theory, two schemes may be visible from the same receptor. This was further assessed by site surveys. This assessment is presented within Chapter 10: Landscape and Visual, as it forms part of the assessment of the Project (i.e. two or more schemes being visible from a single receptor represents an impact of the Project as a whole rather than a cumulative effect as defined in this Chapter).
- A desktop study of current planning applications with a review of the scale, nature and location of each relevant application. Each planning application was assessed to determine if it contributed to a noticeable change in either the prevailing landscape character, or the view from specific receptors.

Eden County Council LDP Housing Association E3, E4

15.5.51 There is no predicted intervisibility between these proposed residential developments around Carleton Avenue and the scheme as a result of intervening topography and woodland. It is therefore considered there would be no change in the significance of effects as a result.

Application 19/0426

15.5.52 There is no predicted intervisibility between the proposed residential development north-west of Hunter Hall School and the scheme as a result of intervening topography and woodland. It is therefore considered there would be a no change in the significance of effects as a result.

Application 20/0013, 20/0312

15.5.53 While there may be a slight increase in cumulative effects during construction of residential properties given the potential overlap in

programmes. This would be minor as a result of intervening vegetation and similar development along the western edge of Appleby-in-Westmorland. Potential cumulative effects are therefore considered to be negligible overall.

Development 19/0272

15.5.54 The application for residential development to the north of Dunfell View would not incur any cumulative effects given the proposed mitigation measures between the application and the scheme would provide sufficient screening. The impacts are therefore regarded as negligible.

Application 20/00585/FULL

15.5.55 While there may be a slight increase in cumulative effects during construction given the potential overlap in programmes, this would be minor given the existing screening of views afforded by woodland north of Ravensworth. Potential cumulative effects overall are considered negligible.

15.5.56 No additional mitigation measures are required.

Material assets and waste

15.5.57 During construction the 'other existing developments and/or approved developments' will consume key materials and generate construction, demolition and excavation (CD& E) waste. However, the planned developments are relatively small therefore they will not produce a notable increase in the demand for materials and generation of CD&E waste. Government policy on waste is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Where this is not feasible, waste management legislation ensures that waste is disposed of in a way that is least damaging to the environment and to human health. The 'other existing developments and/or approved developments' will also be considered by the planning authority in their Minerals and Waste Plans in line with the NPPF. In addition, for the proposed developments no significant effects have been identified in relation to materials consumption and waste during construction. Therefore, there are no likely significant cumulative effects in relation to material assets and waste during construction.

15.5.58 During operation, the 'other existing developments and/or approved developments' will consume much less materials and generate small amounts of waste. The 'other existing developments and/or approved developments' will also be considered by the planning authority in their Minerals and Waste Plans. It is considered that there would be no change to the significance of effects reported in the ES Chapter 11 Materials and Waste during construction or operation.

Mitigations

15.5.59 The Principal Contractor (PC) for the Project will undertake regular discussion with suppliers regarding the availability of key materials, and in particular locally sourced materials, which could be impacted by 'other

existing developments and/or approved developments' in the region. This would allow advanced ordering in order to ensure materials are available when needed to meet the programme but still be able to maximise sourcing of local materials.

15.5.60 The PC will undertake regular discussion with waste management contractors regarding the availability of waste management infrastructure following the proximity principle (the requirement to treat and/or dispose of wastes in reasonable proximity to their point of generation), and plan ahead for requirements to ensure any waste that cannot be reused or recycled can be disposed of as locally to the Project as possible considering 'other existing developments and/or approved developments' ongoing in the region. These measures are set out in the Environmental Management Plan (EMP) (Application Document 2.7), EMP Annex B8 - Materials Management Plan (Application Document 2.7) and EMP Annex B2 - Outline Site Waste Management Plan (Application Document 2.7).

15.5.61 No additional mitigation measures are required.

Noise and vibration

15.5.62 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments (Application Document 3.3) displays the location of each other development.

15.5.63 Where a development has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

Development 20/00067/DIS

15.5.64 As presented in the ES Chapter 12 Noise and Vibration (Application Number 3.2), the construction and operation of the Project does not result in any likely significant effects at receptors located nearby the development site. As such, cumulative effects resulting from the construction and operation of the Project and the development, are unlikely to result in likely significant effects and there would be no cumulation of non-significant effects that would result in a significant effect. Moreover, the impact of the operation of the development upon the nearby road network is unlikely to change considerably. It is therefore considered that there would be no change to the significance of effects reported in the Chapter 12: Noise and Vibration.

Developments 19/0272, 19/0426 and Development Eden County Council LDP Housing Allocation E3

15.5.65 The construction of the Project has the potential to give rise to potential noise impacts at this development site and nearby receptors. With the implementation of an appropriate Noise and Vibration Management Plan and the EMP (Application Document Number 2.7), it is expected that noise

impacts arising from construction will be minimised and hence the cumulative effect is unlikely to result in a significant effect.

15.5.66 The operation of the Project is predicted to give rise to negligible and beneficial impacts at the receptors nearby to this development site (alongside Priest Lane and Cross Street). The northernmost area of the development site may be subject to minor impacts in the short and long-term, however the noise levels are well below the significant observed adverse effect level and therefore effects are assessed as not significant and that there would be no cumulation of non-significant effects that would result in a significant effect. It is considered that there would be no change to the significant effects reported in the Chapter 12: Noise and Vibration.

Eden County Council LDP Housing Allocation E4

15.5.67 The operation of the Project is predicted to give rise to minor and negligible impacts at this development site and receptors nearby. For the areas of the development site which are closest to the A66, noise levels may exceed the significant observed adverse effect level and impacts may result in significant effects. However, the magnitude of impact will decrease at locations within the site that are further away from the A66.

15.5.68 Mitigation at the development site may be required to be developed to protect future receptors. Mitigation may be in the form of orientation: to locate sensitive receptors away from the A66 and use non-sensitive spaces as an acoustic buffer. Mitigation may also be in the form of acoustic barriers, although consideration to the topography of the site would need to be given. With mitigation implemented, residual cumulative effect is likely to be eliminated.

15.5.69 Cumulative effects of the resultant traffic changes from the operational scheme and other cumulative developments are incorporated into the assessment in ES Chapter 12: Noise and vibration and are therefore not assessed further.

15.5.70 No additional mitigation measures are required.

Population and human health

15.5.71 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments (Application Document 3.3) displays the location of each other development.

15.5.72 Where a 'other existing development and/or approved development' has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

Development 20/00067/DIS

15.5.73 There will be minor beneficial impacts due to improved safety and reliability of journey times, which will result in moderate significant beneficial effects upon the Scotch Corner Designer Outlet Village, due to the site's very high

sensitivity. It is considered that there would be no change to the significant effects reported in Chapter 13: Population and Human Health during construction or operation.

Development 20/00585/FULL

15.5.74 The nature of the development is not one that would require a workforce which is comparable to that of the Project during construction. Similarly, the development is substantially distanced from the Project whereby direct effects from land take or demolition are not likely. Therefore, no significant cumulative effects are anticipated during construction.

15.5.75 During operation the Project will provide minor beneficial impacts improve journey time reliability and safety, which would serve to improve traffic conditions in the local area. It is not considered that the cumulative effects during operation would be significant. It is considered that there would be no change to the significant effects reported in the Chapter 13: Population and Human Health during construction or operation.

Developments 16/03310/FPA, 14/0405 and 20/0013

15.5.76 The nature of the development is not one that would require a workforce which is comparable to that of the Project during construction. Similarly, the development is substantially distanced from the Project whereby direct effects from land take or demolition are not likely. Therefore, no significant cumulative effects are anticipated during construction and there would be no cumulation of non-significant effects that would result in a significant effect.

Development 19/0272

15.5.77 The application has approximately 0.17ha (15%) of the total 1.1ha site located within the Order Limits. This represents a negligible impact which when combined with the high sensitivity results in a permanent slight adverse effect, which is not significant during construction. The land take is not expected to compromise the overall viability of the development.

15.5.78 During operation no significant effects are anticipated upon the population receptors. There will be a minor adverse non-significant effect due to a discernible change in amenity due to the potential disturbance as a result of the Project. This is assuming the worst case. It is considered that there would be no change to the significant effects reported in the Chapter 13: Population and Human Health during construction or operation and that would be no cumulation of non-significant effects that would result in a significant effect.

Development 19/0426 and Eden County Council LDP Housing Allocation E3

15.5.79 The nature of the developments would not require a workforce which is comparable to that of the Project during construction. As such no significant cumulative effects are anticipated.

15.5.80 During operation no significant effects are anticipated upon the population receptors and there would be no cumulation of non-significant effects that

would result in a significant effect. There will be a minor adverse non-significant effect due to a discernible change in amenity due to the potential disturbance as a result of the Project. This is assuming the worst case. It is considered that there would be no change to the significance of effects reported in the Chapter 13: Population and Human Health during construction or operation .

Eden County Council LDP Housing Allocation E4

15.5.81 The Land at Carleton Hall Farm will experience land take of 0.03ha which equates to 0.6% of the total size. This represents a negligible impact which when combined with the high sensitivity results in a permanent slight adverse effect, which is not significant during construction. The land take will not compromise the overall viability of the Housing Allocation.

15.5.82 During operation no significant effects are anticipated upon the population receptors and there would be no cumulation of non-significant effects that would result in a significant effect. There will be a minor adverse non-significant effect due to a discernible change in amenity due to the potential disturbance as a result of the Project. This is assuming the worst case. It is considered that there would be no change to the significance of effects reported in the Chapter 13: Population and Human Health during construction or operation.

15.5.83 No additional mitigation measures are required.

Road drainage and the Water Environment

15.5.84 Further information on the location and nature of the developments listed in this section can be found in Appendix 15.2 Cumulative Assessment (Application Document 3.4) and Figure 15.2 Cumulative Developments (Application Document 3.3) displays the location of each other development.

15.5.85 Where a 'other existing development and/or approved development' has not been included in the below sections, these developments are unlikely to give rise to cumulative significant effects and residual effects are not anticipated for either the construction or operational phases.

Developments 20/00067/DIS, 20/00585/FULL, 19/0272, 20/0013, 20/0312, 19/0426, Eden County Council LDP Housing Allocation E3 and Eden County Council LDP Housing Allocation E4

15.5.86 The proposed planning applications are within the ZoI for the Project. With the construction mitigation proposed as part of the Project and best practice construction mitigation implemented and maintained by all developments, it is considered that there would be no change to the significance of effects reported in the Chapter 14: Road Drainage and Water Environment.

15.5.87 No additional mitigation measures are required.

15.6 Mitigation and monitoring

- 15.6.1 The assessment of cumulative effects confirms that no mitigation above the measures identified and proposed within the ES and stated in the EMP (Application Document Number 2.7) is necessary.
- 15.6.2 On that basis, there are no adverse cumulative residual significant effects identified and no additional monitoring is required.

15.7 Summary

- 15.7.1 In line with *DMRB LA 104*, combined and cumulative effects have been assessed based on the conclusions of individual environmental factor assessments.
- 15.7.2 Combined effects are set out in the relevant environmental factor topic chapters, as described above.
- 15.7.3 There are no significant cumulative effects anticipated which would result in any new or materially different significant effects to those identified in each environmental factor chapter of the ES (Chapters 5-14). No mitigation measures further to those set out in the individual environmental factor chapters (Chapter 5: Air Quality to Chapter 14: Road Drainage and the Water Environment) and the EMP (Application Document 2.7) are required.

15.8 References

Department for Transport (2013) Transport and Works Act (TWA) applications and decisions

Department for Transport (2020) Road investment strategy: 2020 to 2025

Highways England (2020) Design Manual for Roads and Bridges LA 104 Environmental assessment and monitoring

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, Schedule 4, Paragraph 5

North Yorkshire County Council (2022) Online Planning Register

Planning Inspectorate (2018) Advice note nine: Rochdale Envelope, Version 3

Department for Transport (2017) Transport Analysis Guidance: WebTAG

Planning Inspectorate (2019) Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, Version 2

Planning Inspectorate (2012) National Infrastructure Planning

Richmondshire County Council (2022) Public Access Portal