

# A303 Amesbury to Berwick Down

TR010025

## 6.1 Environmental Statement

### Chapter 15: Assessment of cumulative effects

Volume 6

APFP Regulation 5(2)(a)

Planning Act 2008

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

October 2018



## 15 Assessment of cumulative effects

### 15.1 Legislative framework and competent expert evidence

15.1.1 Schedule 4 of 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)).

15.1.2 The cumulative assessment has been undertaken by competent experts with relevant and appropriate experience. The technical lead for the cumulative assessment is Robert Beaumont and his professional qualifications and experience are summarised in Appendix 1.1.

### 15.2 Cumulative assessment methodology

15.2.1 The assessment reported within this chapter considers two forms of cumulative impact comprising either:

- a) combinations of impacts which have been identified as part of the assessments reported within Chapters 5 to 14, which are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own; or
- b) impacts which, in combination with impacts associated with other proposed development, are likely to result in an effect of greater significance, or a new or different likely significant effect, than the Scheme in isolation.

15.2.2 The Planning Inspectorate's Advice Note 17 (Ref 15.1) on the assessment of cumulative effects identifies a four stage approach, as follows:

- a) Stage 1 – establish the project's zone of influence (Zol) and identify a long list of 'other development' (the 'development schedule');
- b) Stage 2 – identify a shortlist of 'other development' for the cumulative impact assessment;
- c) Stage 3 – information gathering; and
- d) Stage 4 – assessment.

15.2.3 This approach has been adopted for the assessment, alongside consideration of guidance set out within the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2 Part 5: Assessment and Management of Environmental Effects (HA205/08) (Ref 15.2).

## Significance criteria

15.2.4 The significance of effects has been determined in accordance with the criteria set out in Table 15.1, which are derived from guidance set out within DMRB Volume 11, Section 2, Part 5.

**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 Scheme or cumulative impacts of the Scheme 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.
Large (Adverse or Beneficial)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme 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"> <li>• Permanent for a receptor or receptors of high value;</li> <li>• Localised for a receptor or receptors of very high value; or</li> <li>• Temporary for a receptor or receptors of very high value.</li> </ul>
Moderate (Adverse or Beneficial)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be significant (positive or negative). Effects would be: <ul style="list-style-type: none"> <li>• Permanent for a receptor or receptors of medium value;</li> <li>• Localised for a receptor or receptors of high value; or</li> <li>• Temporary for a receptor or receptors of high value.</li> </ul>
Slight (Adverse or Beneficial)	Where the combined impacts of the Scheme or cumulative impacts of the Scheme 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"> <li>• Permanent for receptors of low value;</li> <li>• Localised for a receptor or receptors of medium value; or</li> <li>• Temporary for a receptor or receptors of medium value.</li> </ul>
Neutral	Where the combined impacts of the Scheme or cumulative impacts of the Scheme in association with other development upon an individual or collection of environmental receptors would be negligible and not significant (positive or negative).

15.2.5 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 in-combination assessment. Similarly, if the overall significance of effect determined using the criteria in Table 15.1 is lower than that assigned within the individual topic assessments, then the highest level of effect is reported in this assessment.

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

## Study area

- 15.2.7 Table 15.2 explains the rationale for the Zol extent for potential cumulative impacts with other development used by each environmental topic. These individual Zols were subsequently combined to define an overall Zol representing the search area within which other development has been identified, as shown on Figure 15.1 (excluding the Zol for Materials due to the study area for that topic encompassing the entire region, and the Zol for climate due to the national / global scale of climate impacts).

**Table 15.2: Zol extents for assessment of potential cumulative impacts**

Environmental topic	Zone of influence (Zol)
Air Quality	<p><b>Construction:</b> 200m from construction activities for construction dust and emissions.</p> <p><b>Operation:</b> The 'affected road network' within the traffic model defines the Zol. As the operational phase traffic data includes traffic associated with other developments, the air quality impact assessment reported within Chapter 5 is inherently cumulative.</p>
Cultural Heritage	<p><b>Construction and Operation:</b> 2km from the Scheme boundary based on the sensitivity of features within the surrounding WHS and other designated assets.</p>
Landscape and Visual <sup>1</sup>	<p><b>Construction and Operation:</b> 2km from the centreline of the Scheme. Beyond this, any other development in combination with the Scheme would be unlikely to give rise to any significant effects on landscape or visual receptors due to the distance reducing the perceived scale and massing of the proposed built elements and associated operational elements (i.e. the traffic moving along the road); and the screening from intervening landform and vegetation.</p>
Biodiversity	<p><b>Construction and Operation:</b> 2km from the Scheme boundary based on proximity to statutory designated sites. Within this, the Zol for assessment purposes varies according to specific biodiversity receptors, is informed by SSSI risk zones and for species by Natural England and best practice guidance from the Chartered Institute of Ecology and Environmental Management and other sources.</p>
Noise and Vibration	<p><b>Construction:</b> The Zol is defined as 600m from the Scheme boundary, as this is the extent over which construction noise impacts are considered within the noise and vibration assessment.</p> <p><b>Operation:</b> As for air quality, this is defined by the traffic model which includes consideration of other development; therefore the assessment reported within Chapter 9 is inherently cumulative.</p>
Geology and Soils	<p><b>Construction and Operation:</b> The Zol in respect of land contamination includes the area inside the Scheme boundary and an additional radial zone of 250m.</p> <p>The groundwater, surface water and potable water abstraction Zol includes a radial zone of up to 5km from the scheme boundary due to this extent being within the potential catchment area.</p>

<sup>1</sup> The methodology adopted for the LVIA requires that any impacts associated with the presence of new infrastructure are taken into account during the operational stage assessment, and therefore differs from the approach used for other topic assessments. The cumulative effects assessment therefore considers a 'worst case' scenario in respect of landscape and visual impacts.

Environmental topic	Zone of influence (Zol)
Road Drainage and the Water Environment	<b>Construction and Operation:</b> The Zol is defined by the extent of the surface water body catchments of the River Till and River Avon (upstream and downstream of the Nine Mile River), including the groundwater body and groundwater source protection zones.
Materials	<p><b>Construction:</b> The Zol comprises the Scheme footprint and the region within which waste management facilities are located and from where construction materials may be sourced<sup>2</sup>.</p> <p><b>Operation:</b> Operational phase material and waste management issues are scoped out of the assessment due to the negligible impact of the Scheme once operational.</p>
People and Communities	<b>Construction and Operation:</b> The Zol is defined as 2km from the Scheme, as this represents the anticipated catchment area for community facilities likely to be affected by severance impacts <sup>3</sup> .

15.2.8 A review of current and previous planning applications, DCO (under construction development, projects on The Inspectorate's programme of projects where a scoping report has or has not been submitted) and Transport and Works Act Order (TWAO) applications, hybrid bills and development plan documents and frameworks was undertaken to identify relevant development within the combined Zol (and just outside the extent of the Zol where appropriate). Certain criteria were used to screen out development of insufficient scale, or of a type which would not result in cumulative impacts with the Scheme, as follows:

- a) Any planning applications older than 5 years at the commencement date of the study (i.e. only considering applications from 2012 onwards).
- b) Construction of small-scale agricultural buildings (e.g. storage of livestock, machinery or feed).
- c) House extensions or cosmetic changes to buildings.
- d) Work to trees.
- e) Micro-generation wind turbines.
- f) Roof mounted solar PV panels (or ground mounted less than 50kW output).
- g) Renewal of planning permission for retention of existing operational use.
- h) Variation to planning permissions, including reserved matters applications (where the original application would not have been considered within the assessment).

<sup>2</sup> The Zol for materials includes the South East and South West of England regions for waste and the whole of the UK for construction materials, as defined within Chapter 12.

<sup>3</sup> The in-combination effects in respect of human health are reported separately in Chapter 13.

- i) Small scale residential uses (specifically, less than two dwellings) or changes of buildings' use (unless it could itself result in a cumulative effect, such as a conversion of several barns into a holiday village).

- 15.2.9 The corresponding 'long list' of development is included at Appendix 15.1 and includes a total of 73 developments and 19 allocations. Each development was assigned a status based on feedback from the planning authority, which indicated the level of certainty and provided an indication of the likely level of detail available.
- 15.2.10 Taking account of the stakeholder comments provided, and using GIS maps to consider the spatial relationship with the Scheme, each of the developments and allocations were considered in terms of whether they would be likely to generate impacts which could combine to result in cumulative effects in combination with the Scheme. Criteria used for this process were specific to each discipline, taking account of scale, nature and timescales in each case.
- 15.2.11 The result of this process was a defined short list for which more detailed information gathering was undertaken, including desk study and site visits, to assist in the identification of potential impacts and cumulative effects. The shortlist of developments and allocations is included at Appendix 15.2 and their locations in relation to the Scheme are shown on Figure 15.2.

### **Consultation**

- 15.2.12 The long list of identified development was discussed and agreed with the local planning authorities, Wiltshire Council and Test Valley Borough Council, and circulated to the statutory environmental bodies for comment in February 2018. A meeting was held with Wiltshire Council to discuss the methodology and preparation of the initial long list in January 2018.
- 15.2.13 A copy of the shortlist was circulated to the local planning authorities and statutory environmental bodies for their further comments in May 2018 and subsequently finalised for the purpose of commencing with assessments.
- 15.2.14 A final check was undertaken in August 2018 which included a search of planning applications submitted since 30 April 2018. Wiltshire Council was consulted further and responded 16 August 2018 to confirm additional developments and allocations for consideration.

### **Approach to the consideration of combined impacts**

- 15.2.15 A review of the assessments reported in Chapters 5 to 14 (and their associated appendices reporting non-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.

## Approach to the consideration of other developments

### *Traffic flows*

- 15.2.16 The overall list of other development and allocations was prepared jointly with the transport planners responsible for developing the traffic model, including developments which are judged to be 'near certain' and 'more than likely' in the traffic forecasting as being 'reasonably foreseeable' as defined by HA205/08 (Ref 15.2). Therefore, the predicted traffic flows associated with the other developments and allocations identified have been included in the traffic flow predictions.
- 15.2.17 These developments include Highways England's A303 Sparkford to Ilchester and A358 Taunton to Southfields schemes, both due to open in 2023. The predicted traffic flows during construction and operation were used in the noise, air quality, water and people and communities assessments and, as such, these assessments are inherently cumulative. This also applies to the conclusions drawn where other topics have relied on the results of these assessments (including biodiversity and cultural heritage).

### *Baseline*

- 15.2.18 Any development completed by February 2018 has been considered as part of the baseline and assessments reported within the preceding topic chapters. There are 18 such developments / allocations, as indicated at Appendix 15.2.

### *Future baseline*

- 15.2.19 Any development that has been permitted, but construction has not yet started, has been included in the future baseline for the construction (2021) and operation (2026) scenarios and assessed in the topic chapters. Where there are any differences in the Scheme's effects because of differences between the current and future baselines (both construction and operational phase), this is described in the 'Future Baseline' sub-section within the 'Assessment of Effects' section of the topic chapters. There are 43 such developments / allocations. In summary, no significant effects have been identified which are associated with the development considered as part of the future baseline.

### *Potential for cumulative impacts*

- 15.2.20 Where a development is proposed but not yet permitted, it has been considered in the cumulative scenario below for the construction phase (2021) and future baseline for the operational phase (2026) assessment. There are nine developments in this category (refer to Appendix 15.2) as follows:
- a) Outline Planning Application for residential development of 16 dwellings, located approximately 6km south of the Scheme;
  - b) New road access to field, located approximately 7.5km north of the Scheme;

- c) Demolition and redevelopment of a mixed use development in the centre of Salisbury, approximately 11km south of the Scheme;
- d) Demolition of existing buildings and development of an eco-village of 60 dwellings, approximately 10km south of the Scheme;
- e) Outline application for access only for proposed mixed use development approximately 8km south of the Scheme;
- f) Extension of electricity sub-station and installation of power cable from the existing Salisbury sub-station just north of Quidhampton to the boundary of the Scheme;
- g) Installation of a water pipeline between the Castle Barn and Shrewton Reservoirs, north of the Scheme, and subsequently across farmland to connect with an existing pipeline running south along the B3083 to the boundary of the Scheme;
- h) Experimental Traffic Regulation Order (ETRO) on Byways AMES 11 and 12; and
- i) A mixed-use development including approximately 462 dwellings, with provision for a mix of employment, commercial/leisure, and aviation uses, located approximately 8km south of the Scheme.

### 15.3 Assessment of combined effects of the Scheme

- 15.3.1 This section provides a summary of the potential combinations of impacts which have been identified as part of the assessments reported within Chapters 5 to 14, and which are considered likely to affect a single receptor.
- 15.3.2 The amenity section of Chapter 13 People and Communities considers the combined residual significant effects from other assessment topics (noise, air quality, traffic, landscape and visual) which could affect people's enjoyment of a public right of way, community facility or residential property or the viability of a business. Chapter 14 Climate also includes specific consideration of combined climate impacts. As such, these in combination assessments are not replicated here but are summarised as follows:
- a) No significant effects upon amenity due to combinations of two or more individual significant effects; and
  - b) The potential for minor (but not significant) effects upon groundwater and surface water due to future climate change impacts.
- 15.3.3 Table 15.3 and Table 15.4 include details of the receptors which may be subject to combined impacts; in some cases, the combined effect is equivalent to the 'worst case' effect already identified for a single environmental topic. Where it is considered that the combination of impacts may increase the overall effect magnitude, the resulting effect has been assigned based upon the professional

judgement of the relevant topic specialists and in accordance with the significance criteria set out within Table 15.1.

**Table 15.3: Summary of potential combined impacts upon a single receptor (construction)**

Receptor	Value	Potential in-combination impact	Duration	Scale	Cumulative effect	Mitigation	Residual effect
Recreational users in Parsonage Down NNR	High	Visual (major) Noise (potential adverse) Dust (potential adverse)	Temporary	Local	Very large adverse*	None considered practical above the measures outlined within the OEMP	Very large adverse*
Cherry Lodge	Medium	Visual (moderate) Noise (potential adverse) Dust (potential adverse)	Temporary	Local	Large adverse*	None considered practical above the measures outlined within the OEMP	Large adverse*
Recreational users on byways within the River Till floodplain	High	Visual (major) Noise (potential adverse)	Temporary	Local	Large adverse*	None considered practical above the measures outlined within the OEMP	Large adverse*
Foredown House	High	Visual (major) Noise (potential adverse)	Temporary	Local	Very large adverse*	None considered practical above the measures outlined within the OEMP	Very large adverse*
Residents in the northern part of Winterbourne Stoke	High	Visual (major) Noise (potential adverse)	Temporary	Local	Large adverse*	None considered practical above the measures outlined within the OEMP	Large adverse*

Receptor	Value	Potential in-combination impact	Duration	Scale	Cumulative effect	Mitigation	Residual effect
Countess Farm	High	Visual (major) Noise (potential adverse) Dust (potential adverse)	Temporary	Local	Large adverse*	None considered practical above the measures outlined within the OEMP	Large adverse*
Recreational users in Lords Walk	High	Visual (major) Noise (potential adverse)	Temporary	Local	Large adverse*	None considered practical above the measures outlined within the OEMP	Large adverse*

*\*Due to stand-alone effect reported in individual topic assessment*

**Table 15.4: Summary of potential combined impacts upon a single receptor (operation)**

Receptor	Value	Potential in-combination impact	Duration	Scale	Cumulative effect	Mitigation	Residual effect
Recreational users on byways within the River Till floodplain	High	Visual (moderate) Noise (potential adverse)	Permanent	Local	Large adverse	Solid bridge parapet and the measures outlined within the OEMP	Moderate adverse
Countess Farm	High	Visual (major) Noise (potential adverse) Dust (potential adverse)	Permanent	Local	Large adverse	On and off-site planting and noise barriers	Moderate adverse

Receptor	Value	Potential in-combination impact	Duration	Scale	Cumulative effect	Mitigation	Residual effect
Receptors in Winterbourne Stoke, including residential buildings	High**	Noise (moderate/major reduction in traffic noise levels) Air quality (large decreases in NO2 concentration) Visual (reducing the volume and visual impact of vehicles passing through)	Permanent	Local	Large beneficial	None proposed	Large beneficial
Visitors to the WHS	High	Visual (moderate) Cultural heritage (improved public access to WHS) Noise (major reduction in operational traffic noise at Stonehenge)	Permanent	Local	Large beneficial	None proposed	Large beneficial

\*\* Value not specifically assigned within topic assessments, but considered high for the purpose of the cumulative effects assessment.

- 15.3.4 The cumulative assessment has identified a number of receptors where in-combination impacts may be anticipated, particularly during construction activities where works would be in close proximity to receptors. Due to the nature of the works, there are limited opportunities for mitigation measures to avoid these potentially significant adverse effects during construction.
- 15.3.5 It should be noted that the visual impacts alone are currently anticipated to result in significant effects on the identified receptors. The additional adverse impacts due to noise and (in some cases) dust, which are not on their own significant, may be expected to combine resulting in an effect of greater magnitude, but which would vary during the construction period due to the phasing of works. The combined effects reported in Table 15.3 and Table 15.4 therefore represent the 'worst case' construction period.
- 15.3.6 Once the Scheme is operational, some significant adverse effects are likely to remain in respect of recreational users on byways within the River Till floodplain

and the residents of Countess Farm. Significant beneficial effects due to combined impacts have also been identified once the Scheme is operational, related to the removal of existing A303 traffic from Winterbourne Stoke and traffic from the central section of the WHS.

## 15.4 Assessment of cumulative effects with other development

- 15.4.1 Developments within the assessment matrix (Appendix 15.2) were first considered by each of the environmental topics in isolation, and then further in relation to potential impact interactions between other development and the combination of individual topic impacts.
- 15.4.2 Of the nine other developments identified with the potential for in-combination impacts, none are anticipated to result in significant cumulative effects with the Scheme during construction or operation.
- 15.4.3 In most cases, this is due to the other development being located at such a distance from the Scheme that any potential for interaction is limited to a slight increase in construction traffic flows. As traffic forecasts already include the contribution from other developments, this cumulative impact is already assessed as part of the air quality, noise and other studies which take account of changes to traffic flow.
- 15.4.4 Of those proposed developments that would be in close proximity to the Scheme, the consideration of the Experimental Traffic Regulation Order (ETRO) has concluded that any cumulative effects would likely be positive due to the continued absence of motorised vehicles from the byways. In terms of the utility works included in the assessment matrix (comprising the water pipeline and power cable), the scale of these works is such that in the context of the construction works associated with the Scheme, any cumulative effects are not considered to be significant.

## 15.5 Monitoring

- 15.5.1 No mitigation measures specific to the identified significant effects are proposed, above the standard measures already proposed in the OEMP. On that basis, no monitoring of significant effects is proposed.

## References

- Ref 15.1: The Planning Inspectorate (2015), Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects
- Ref 15.2: Highways Agency (2008), Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2 Part 5: Assessment and Management of Environmental Effects (HA205/08)

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