



## APPENDIX 5.1 - SCOPING REPORT

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Not updated



**West Sussex County Council**

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# **A29 REALIGNMENT**

## **Environmental Impact Assessment Scoping Report**







## **West Sussex County Council**

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# **A29 REALIGNMENT**

## **Environmental Impact Assessment Scoping Report**

**PUBLIC**

**PROJECT NO. 70055091**

**OUR REF. NO. 70055091\_SCOPING\_V01**

**DATE: APRIL 2019**

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**West Sussex County Council**

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## **A29 REALIGNMENT**

Environmental Impact Assessment Scoping Report

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## Quality control

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	FINAL DRAFT for Business Case	Final for Planning		
Date	06/12/2018	02/04/2019		
Prepared by	Rebecca Dipoti/ Various	Rebecca Dipoti/ Various		
Signature				
Checked by	Elaine Holmes	Clare Williams		
Signature				
Authorised by	Jo North	Jo North		
Signature				
Project number	70031782	70055091		
Report number	1782-WSP-00-ZZ- Doc-C-AC15-0002 DRAFT	70055091_SCOPING_V01		
File reference	\\uk.wspgroup.com\Central Data\Projects\700317xx\70031782 - WSCC - A29 Prelim Design and O\01 Manage\09 Record of Issue\181206 - EIA Scoping Report	<a href="\\uk.wspgroup.com\central&lt;br/&gt;data\Projects\700550xx\70055091 -&lt;br/&gt;WSCC - A29&lt;br/&gt;Phase 1 Planning&lt;br/&gt;Application\03&lt;br/&gt;WIP\EI EIA and&lt;br/&gt;Planning\05&lt;br/&gt;Reports">\\uk.wspgroup.com\central data\Projects\700550xx\70055091 - WSCC - A29 Phase 1 Planning Application\03 WIP\EI EIA and Planning\05 Reports</a>		



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## SUMMARY

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- 1.1.1. West Sussex County Council (WSCC) Major Project's team intend to apply for planning permission for the proposed realignment of the A29 (the scheme).
- 1.1.2. WSCC as promoters of the scheme are requesting a scoping opinion from WSCC as planning authority on the scope of the EIA. This scoping report is provided as information for WSCC to support an opinion on the scope of the EIA.
- 1.1.3. The scheme would comprise a 30mph, 1.3km single carriageway with 3m wide cycleway and footway, 2.5m wide central island, four uncontrolled crossings, three roundabouts, landscaping, potential noise barriers and other associated works.
- 1.1.4. It would tie into the A29 Fontwell Avenue to the north west and the B2233 Barnham Road to the south, with two new roundabouts. A third roundabout would provide access to planned residential areas.
- 1.1.5. Current estimated site area is 11.4ha (excluding construction compounds, haulage and temporary access).
- 1.1.6. The construction of roads falls under Part 10(f) of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
- 1.1.7. As the scheme would exceed 1ha in area it should be screened for the need for Environmental Impact Assessment (EIA). EIA is only required if there would be likely significant environmental effects and the scope should be confined to likely significant environmental effects.
- 1.1.8. At less than 2km, the scheme would not exceed the 'indicative threshold' for Part 10(f) development having a likely significant environmental effect and needing EIA, as set out in the Annex to Planning Practice Guidance on EIA.
- 1.1.9. A formal screening opinion has not been sought, but WSCC have informally advised that the scheme does need EIA.
- 1.1.10. This is because it close to dwellings that would likely be significantly affected by noise. It would also require the removal of orchard habitat, with potential significant effects on protected species.
- 1.1.11. Significant environmental effects are also considered likely due to the cumulative effects on landscape, views and air quality, and from noise, with other nearby substantial developments identified in the local plan.
- 1.1.12. These developments include the allocated housing sites at Barnham, Eastergate, Westergate, and Phase 2 of the A29 Realignment. This section of road of approximately 2.7km would tie in with the roundabout proposed as part of this scheme on the B2233 Barnham Road, with the existing A29 Lidsey Road opposite Lidsey Caravan Park.
- 1.1.13. Habitats Regulations Assessment (HRA) screening will also be needed due to the proximity of Pagham Harbour Special Protection Area (SPA) and Chichester and Langstone Harbours Ramsar site and SPA.

# 1. BACKGROUND

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## 1.1. INTRODUCTION

- 1.1.1. West Sussex County Council (WSCC) as promotor of the scheme intend to submit a planning application to WCSS as planning authority for the proposed realignment of the A29 (the scheme).
- 1.1.2. The realignment of the A29 will support the housing allocations at Barnham, Eastergate, Westergate during the Arun Local Plan period (2011-2031).
- 1.1.3. The site location for the scheme is shown in **Figure 1-1** in **Appendix B** and the scheme alignment is shown in **Figure 1-2** in **Appendix B**.
- 1.1.4. WSCC as promoters of the scheme are requesting a scoping opinion from WSCC as planning authority on the scope of the EIA. This scoping report is provided as information for WSCC to inform an opinion on the scope of the EIA.

## 1.2. THE NEED FOR EIA

- 1.2.1. The aim of the EIA is to avoid, prevent, reduce or, as a last resort, offset any potential significant adverse environmental impacts of development proposals, and enhance positive ones.
- 1.2.2. It ensures planning decisions are made in knowledge of any significant environmental effects following engagement with statutory bodies, local and national groups and members of the public<sup>1</sup>.
- 1.2.3. The EIA Regulations 2017 set out the types of development which must always be subject to an EIA (Schedule 1 development) and other developments, which may require EIA if they are likely to give rise to significant environmental effects (Schedule 2 development).
- 1.2.4. The construction of roads falls under Part 10(f) of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. As the scheme would exceed 1ha in area it should be screened for the need for EIA.
- 1.2.5. The scope of the EIA should therefore be confined to likely significant environmental effects.
- 1.2.6. The selection criteria for screening a Schedule 2 development is within Schedule 3 of the EIA Regulations 2017. The characteristics and the location of the development, along with the type and characteristic of the potential impact of the development should be taken into account.
- 1.2.7. The characteristics of the development can include the likely impacts in cumulation with other existing development and/or approved development.
- 1.2.8. At less than 2km, the scheme would not exceed the 'indicative threshold' for Part 10(f) development being likely to have significant environmental effects. This threshold is set out in the Annex to Planning Practice Guidance on EIA.
- 1.2.9. The scheme would be close to dwellings that would likely be significantly affected by noise. It would also require the removal of orchard habitat, with potential significant effects on protected species.
- 1.2.10. Significant environmental effects are also considered likely due to the cumulative effects on landscape, views and air quality, with other nearby substantial developments identified in the local plan.

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<sup>1</sup> Department for Communities and Local Government (online) National Planning Practice Guidance

- 1.2.11. These developments include the allocated housing sites at Barnham, Eastergate, Westergate, and Phase 2 of the A29 Realignment.
- 1.2.12. This 2.7km section of road would tie in with the roundabout proposed as part of this scheme on the B2233 Barnham Road, and with the existing A29 Lidsey Road opposite Lidsey Caravan Park
- 1.2.13. This Scoping Report provides relevant detail as appropriate and compliant with the EIA Regulations 2017 and guidance to agree the scope of the ES to accompany a Full Planning Application.
- 1.2.14. For each of the environmental topics for which it is considered there is potential for significant environmental effects, the following is provided:
  - Background studies to inform the assessment;
  - Identified sensitive receptors;
  - Assessment methodology (including baseline data collection, methodology, nature of assessment and key legislation, standards or guidance to be followed);
  - Likely significant environmental effects (for both the construction and operational stages);
  - Environmental effects that are not expected to be significant (where identified);
  - Effects considered elsewhere in the ES; and
  - Limitations and assumptions (where appropriate).

### **1.3. THE SITE AND SURROUNDINGS**

- 1.3.1. The scheme would be located within a rural/suburban area to the north of Eastergate and the north-west of Barnham, both villages north of Bognor Regis.
- 1.3.2. The surrounding area contains a mix, residential and commercial uses both within the surrounding villages and along the local road network, surrounded by agricultural land.
- 1.3.3. There are 26 listed buildings within 1km of the scheme, which include the Grade II\* Parish Church of St George. The remaining listed buildings are Grade II, which include: houses, cottages, farm buildings and memorials. 24 of the listed buildings are located in Eastergate and Westergate, one in Barnham and one on Choller Farm (east of the scheme).
- 1.3.4. The Eastergate (Church Lane) and Eastergate Square Conservation Areas are both located approximately 430m south-east of the scheme, and contain a concentration of listed buildings.
- 1.3.5. There are several Archaeological Notification Areas (ANAs) in this part of West Sussex, but known within it.
- 1.3.6. There are no World Heritage Sites, Scheduled Monuments, Registered Battlefields, or registered Parks and Gardens within the site or surrounds.
- 1.3.7. A29 is largely unlit, except at key junctions, with street lighting along the B2233 Barnham Road, as well as a number of the residential roads off the B2233.
- 1.3.8. The site comprises arable fields, woodland, orchard and areas of managed grassland, between the B2233 (Barnham Road) in Eastergate and the A29 south of Eastergate Lane.
- 1.3.9. Much of the site is identified as priority habitat (traditional orchards and woodland) in the Priority Habitat Inventory (England) and Priority Habitat Network (England).
- 1.3.10. There is at least one veteran tree within the site. A small section is covered by Tree Preservation Order 'Eastergate No. 1/69'.
- 1.3.11. A barn, a business and two occupied dwellings are within the site at the western end at Folly Foot Farm, along with several drainage ditches and an Ordinary Watercourse.

- 1.3.12. There are residential areas close to the scheme, including along the B2233 Barnham Road, Downview Road, Ewens Gardens, Murrell Gardens, Cherry Tree Drive, Collins Close and A29 Fontwell Avenue.
- 1.3.13. Fleury nursery is located to the south of B2233 Barnham Road.
- 1.3.14. Footpath 318, a north-south running public right of way (PROW), crosses the site between the B2233 Barnham Road and Eastergate Lane.
- 1.3.15. Existing vehicular access to the scheme is via farm tracks, and through private land owned by local farms and businesses.
- 1.3.16. This area comprises high quality agricultural land, however, it is not currently used for agricultural purposes.
- 1.3.17. There are areas of vegetation along the eastern boundary of the Fordingbridge Industrial Estate and along the eastern boundary of the residential properties on Murrell Gardens.
- 1.3.18. The main access to the Site and construction compound will be gained via a temporary access track and haulage route off the B2233 Barnham Road, between the Fordingbridge Industrial Estate and Murrell Gardens.

## 1.4. SCHEME DESCRIPTION

- 1.4.1. The scheme would comprise a 30mph, 1.3km single carriageway with 3m wide cycleway and footway, 2.5m wide central island, four uncontrolled crossings, landscaping, potential noise barriers and other associated works.
- 1.4.2. It would tie into the A29 Fontwell Avenue to the north west and the B2233 Barnham Road to the south, with two new roundabouts. A third roundabout in the centre of the scheme would provide access to planned residential areas.
- 1.4.3. The scheme footprint, as currently know is shown by the red line boundary in **Figure 2.1** in **Appendix B**. It would occupy an area of 11.4ha with an additional 4.1ha temporarily required for construction compounds and access.
- 1.4.4. Key features of the scheme would include:
  - A three-arm roundabout at the western end at a new junction with the A29 Fontwell Avenue.
  - A three-arm roundabout in the centre of the scheme to provide future access to housing.
  - A three-arm roundabout at the southern end, at a new junction with the B2233 Barnham Road.
  - One uncontrolled pedestrian crossing with a 2.5m wide central island to enable users of the PRow to cross the carriageway.
  - Crossing points at the junctions to allow access by foot into the housing from surrounding areas.
  - A shared 3m wide footway and cycleway with landscaping on one side of the carriageway.
  - Potential noise mitigation to protect dwellings at Murrell Gardens, Chantry Mead and Ewens Gardens.
  - Potential street lighting at roundabout approaches.
  - Construction compounds are likely to be located north of the Fordingbridge Industrial Estate.
- 1.4.5. Land at Fleurie Nursery would be required for the construction of the roundabout on the southern B2233 Barnham Road. Temporary access may be provided to the nursery during construction.
- 1.4.6. Two two-storey residential dwellings, both of which are currently occupied, a shed and a corrugated metal barn used by a local business, all within Folly Foot Farm are proposed to be demolished.
- 1.4.7. The front access to Folly House would be redesigned and landscaped.

## 1.5. CONSTRUCTION ACTIVITIES

- 1.5.1. Details of the construction methods to be used on-site will be decided by the construction contractor after planning permission has been granted.
- 1.5.2. Assumptions have been made based on professional experience and what is known of the site.
- 1.5.3. Construction is likely to involve:
- Creation of temporary construction compound.
  - Clearance and creation of temporary access.
  - Installation of temporary fencing and/or hoarding.
  - Vegetation and tree removal, and use of protective measures around retained features.
  - Demolition of the courtyard and two two-storey residential dwellings, both of which are currently occupied.
  - Demolition of a single story shed and a corrugated metal barn used by a local business within Folly Foot Farm.
  - Dewatering (if necessary) in trenches and excavations.
  - Movement and use of static and mobile plant/construction vehicles.
  - Diversion of applicable utilities, including the relocation of a substation located off the existing A29 Fontwell Avenue.
  - Validation of ground conditions, earthworks and re-profiling to meet required levels/noise mitigation.
  - Export of some material off-site (anticipated to be a limited volume and primarily associated with any vegetation/contaminated material which cannot be disposed of onsite).
  - Materials handling, storage, stockpiling and disposal.
  - Formation of drainage features.
  - Construction of infrastructure associated with the scheme.
  - Construction of the scheme.
  - Hard and soft landscaping including environmental/ecological mitigation if required.
- 1.5.4. Temporary construction lighting would likely be installed for security and safety. This may include lighting around the site perimeter and at accesses, working areas, temporary car parking areas, construction compounds, and at ancillary facilities. It is unlikely to include floodlighting.
- 1.5.5. It is assumed that contractor would be registered with the Considerate Constructors scheme, comply with environmental legislation and guidance, and minimise potential disturbance/nuisance at residential areas.
- 1.5.6. Details on demolition and site preparation can be set out in a Construction Method Statement (CMS) and Construction Environmental Management Plan (CEMP), which can be secured with a planning condition.
- 1.5.7. Construction working hours can be also be restricted with a planning condition.
- 1.5.8. All parking associated with the workforce and deliveries would be within the site.
- 1.5.9. The main access to the site and construction compound is likely with a temporary access track and haulage route off the B2233 Barnham Road, between the Fordingbridge Industrial Estate and between residential properties on Murrell Gardens.
- 1.5.10. This access route will intersect two hedgerows immediately north of the Fordingbridge Industrial Estate.



- 1.5.11. Access may also be gained from the A29 Fontwell Avenue, approximately 100m south of Eastergate Lane, which will intersect an area of Broadleaved Woodland (plantation) and semi-improved neutral grassland.
- 1.5.12. The proposed scheme is shown in **Figure 1-2** in **Appendix B**.

## 2. APPROACH TO THE EIA

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### 2.1. INTRODUCTION

- 2.1.1. WSCC as promoters of the scheme are requesting a scoping opinion from WSCC as planning authority on the scope of the EIA. This scoping report is provided as information for WSCC to inform an opinion on the scope of the EIA.
- 2.1.2. It is considered that significant environmental effects are likely in the following areas and so should be within the scope of the EIA:
- Landscape and views;
  - Ecology and biodiversity;
  - Noise and vibration;
  - Air quality; and
  - Cumulative and Effect Interactions Assessment according to DMRB Volume 11 Section 2 Part 5 (HA 205/08).
- 2.1.3. For the following subjects, no potential significant environmental effects are predicted and so it is considered they should not be included in the ES:
- Archaeology and Built Heritage;
  - Population and health;
  - Ground Conditions and Contamination;
  - Water Resources, Flood Risk, Groundwater and Drainage;
  - Material and Waste;
  - Climate;
  - Transport and Access;
  - Risk of Major Accidents and/or Disaster; and
  - Heat and Radiation.
- 2.1.4. The following reports and assessments will support the planning application, along with the Environmental Statement:
- Planning statement;
  - Design and Access Statement;
  - Aerodrome Safeguarding Statement;
  - Archaeological Desk Based Assessment;
  - Flood Risk Assessment;
  - Surface Water Drainage Assessment;
  - Arboricultural Survey and Impact Assessment;
  - Land Contamination Assessment Phase 1 (and if required Phase 2);
  - Lighting Assessment; and
  - Stage 1 Road Safety Audit/Designers Response/Exception Report.

### 2.2. LEGISLATIVE COMPLIANCE

- 2.2.1. **Table 2-1** confirms the compliance of this Scoping Report with the requirements of the EIA Regulations 2017 (Part 4, Regulation 15).

#### **Table 2-1 – Location of information required by the EIA Regulations 2017**

Information required by the EIA Regulations 2017 (Part 4, Regulation 15)	Location within Scoping Report
A plan sufficient to identify the land	Appendix B
A brief description of the nature and purpose of the development, including its location and technical capacity	Chapters 1
An explanation of the likely significant effects of the development on the environment	Chapters 4- 8
Such other information or representations as the person making the request may wish to provide or make	Chapters 4 – 8 Appendix A

## 2.3. BASELINE CONDITIONS AND ASSUMPTIONS

- 2.3.1. Baseline conditions, including future baseline scenarios, will be set out within each chapter.
- 2.3.2. Likely significant environmental effects as a result of the scheme will be described in relation to deviation from the baseline environment within the site/ study area/and surrounding area, where appropriate.
- 2.3.3. The baseline conditions for the ES will vary depending on the timing of the survey or the date when data sources will have been produced/accessed.
- 2.3.4. Baseline conditions will be established by:
- Site visits and surveys;
  - Desk-based studies; and
  - Modelling.
- 2.3.5. Much of the information to inform the baseline environment used in the assessments will be based upon data obtained or surveys completed between 2018 and 2019.
- 2.3.6. Some data obtained from third parties may be older. The origin of all third-party data will be clearly identified, alongside any limitation and assumptions.

## 2.4. ASSESSMENT METHODOLOGY

- 2.4.1. DMRB is intended for the assessment of trunk roads, and motorways, but it is the most relevant guidance for the assessment of highway projects. Therefore, where appropriate it is adopted for the assessment of the scheme.
- 2.4.2. A combination of simple and detailed assessments is proposed for the EIA, as set out in the methodology sections of the **Chapters 4 to 8**.
- 2.4.3. In each chapter the methodology describes:
- How the existing baseline conditions will be established;
  - Any consultations that will take place during the assessment process; and
  - How the effects will be assessed and the criteria used to assess significance of effects.
- 2.4.4. The overall methodology under DMRB can be summarised generally as a three-stage process:
- Evaluating the value or importance of a resource and the sensitivity of the receptors;
  - Assessing the magnitude of the effect of the scheme on the resource receptor and if it is adverse or beneficial; and

- Determining the significance of effect, which depends upon the value or the resource and magnitude of effect.

## 2.5. IDENTIFICATION OF SENSITIVE RECEPTORS

2.5.1. The sensitivity of a receptor may depend upon its:

- Rarity and/or abundance;
- Quality;
- Location;
- Statutory designation and its importance in a national, regional and local scale;
- Historic or cultural associations;
- Regenerative capacity or fragility;
- Absorption capacity of the natural environment; and
- Replicability.

2.5.2. **Table 2-2** describes the criteria and descriptors that would be used to determine the environmental value of an environmental resource or receptor.

**Table 2-2 – Environmental sensitivity of a resource or receptor and typical description<sup>2</sup>**

Sensitivity	Criteria
Very high	High importance and rarity, international scale and limited potential for substitution.
High	High importance and rarity, national scale with limited potential for substitution.
Medium	High or medium importance and rarity, regional scale with limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

## 2.6. MAGNITUDE OF IMPACT

2.6.1. The magnitude of impact will be assessed against a defined hierarchy of scale specific to each environmental topic but in general, are described as major, moderate, minor and negligible (**Table 2-3**).

**Table 2-3 – Magnitude of impacts and typical descriptions<sup>3</sup>**

Magnitude of Impact	Criteria

<sup>2</sup> DMRB Volume 11, Section 2, Part 5: HA 205/08, Table 2,1

<sup>3</sup> DMRB Volume 11, Section 2, Part 5: HA 205/08, Table 2,2

Major	<p>Loss of resource and/or quality and integrity; severe damage to key characteristics, features or elements (adverse).</p> <p>Large scale or major development or resource quality; extensive restoration or enhancement; major improvement to attribute quality (beneficial).</p>
Moderate	<p>Significant effects on the resource, but not adversely affecting the integrity; Partial loss of/damage to key characteristics, features of elements (adverse).</p> <p>Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (beneficial).</p>
Minor	<p>Some measurable change in attributes quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (adverse).</p> <p>Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements some beneficial effects on attribute or a reduced risk of negative effects occurring (beneficial).</p>
Negligible	<p>Very minor loss or detrimental alteration to one or more characteristic features or elements (adverse).</p> <p>Very minor benefit to or positive addition of one or more characteristics, features or elements (beneficial).</p>
No change	<p>No loss or alteration of characteristics, features or elements; no observable impact in either direction.</p>

2.6.2. Impacts may also be described as:

- Direct: caused by activities which are an integral part of the project;
- Indirect: due to activities which are not part of the project;
- Secondary: a consequence of a primary impact;
- Cumulative: comprising many impacts that singly are not significant, but when assessed together may be significant;
- Short, medium or long-term;
- Temporary or permanent: For example, dust generated during construction would be temporary; land taken by the scheme would be permanent; and
- Several of the impact descriptions are interdependent, such that it is possible to have a direct cumulative long-term permanent impact.

## 2.7. SIGNIFICANCE CRITERIA

2.7.1. Significance criteria are to be used to determine the impact, and they can be measured against (inter alia) the following:

- The magnitude of the impact;
- The spatial relationship of the impact to the receptor;
- The number of receptors affected/ the scale of the impact;

- If the impact is permanent or reversible through mitigation;
- The complexity of the impact;
- The probability of the impact;
- The value and importance of the receptor in terms of environmental and planning policy legislation; and
- The sensitivity and rarity of the receptor.

2.7.2. Significant effects may arise as a result of a negligible impact on a resource of national value, or a major impact on a resource of local importance.

2.7.3. Assignment of significance to an effect will be undertaken in a consistent and systematic manner through the establishment of a set of significant criteria following guidance set out in DMRB Volume 11, Section 2, HA 205/08 and IAN 125/15. The matrix to be used to determine the significance of effects to an environmental resource is demonstrated in **Table 2-4**. The effects can either be considered adverse or beneficial.

**Table 2-4 – Matrix used to determine the significance of effects**

Magnitude of impact	Environmental Value (Sensitivity)				
	Very high	High	Medium	Slight or moderate	Slight
Major	Very large	Large or very large	Moderate or large	Slight or moderate	Slight
Moderate	Large or very large	Moderate or large	Moderate	Slight	Neutral or slight
Minor	Moderate or large	Slight or moderate	Slight	Neutral or slight	Neutral or slight
Negligible	Slight	Slight	Neutral or slight	Neutral or slight	Neutral
No change	Neutral	Neutral	Neutral	Neutral	Neutral

2.7.4. The ES will report on the likely significant environmental effects for the construction and operational stages of the scheme.

## 2.8. MITIGATION

2.8.1. Three types of mitigation will be identified:

- Primary mitigation: modifications to the location or design of a scheme made during the pre-application phase that are an inherent part of the project;
- Secondary mitigation: actions that will require further activity in order to achieve the anticipated outcome. These will be set out in the ES and can be secured with a planning condition; and
- Tertiary mitigation: actions that would occur with or without input from the EIA informing the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are standard practices used to manage commonly occurring environmental effects (i.e. construction related nuisances).

2.8.2. The primary and tertiary mitigation will be presented within the scheme Description chapter.

- 2.8.3. Secondary mitigation measures will be outlined within the 'Assessment of Effects, Mitigation Measures and Residual Effects' Section of each technical chapter. These mitigation measures will seek to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment.
- 2.8.4. It is anticipated that such mitigation will be secured by planning conditions and S106 obligations that will also control the development thresholds for implementation of the planning permission.

## 2.9. RESIDUAL EFFECT ASSESSMENT

- 2.9.1. Following the implementation of the mitigation measures, an assessment of the significance of residual effects will be undertaken and the findings will be presented within each technical chapter of the ES.
- 2.9.2. The EIA and technical assessments will all rely upon the assessment approach, terminology and significance criteria and weighting of effects as described in this chapter.

## 2.10. OTHER

- 2.10.1. The EIA will be produced in accordance with Schedule 4 of the EIA Regulations 2017 including all necessary information to satisfy Regulation 18(2) - (4) and National Planning Practice Guidance.
- 2.10.2. WSP will be responsible for the coordination, compilation and procedural review of the ES and technical assessments will be undertaken by a suitably qualified project team to satisfy Regulation 18(5) (a) of the EIA Regulations 2017. IEMA has awarded WSP the EIA Quality Mark for our holistic activity around EIA. WSP has continued to maintain this following ongoing, annual examination in relation to our ongoing products, staff, innovation and promotion of EIA within the industry. WSP continues to support and lead nationally recognised guidance for EIA in the UK.
- 2.10.3. The adequacy of the material presented in the ES and generally as part of an application is a matter of judgment for the Local Planning Authority (LPA), which in this case is WSCC. In judging the adequacy of the material submitted, a LPA is required to act rationally and to have regard to the context within which the application is made.

## 2.11. ASSESSMENT SCENARIOS

- 2.11.1. There are two main stages to assess: the scheme being construction and the scheme when in operation.
- 2.11.2. An indicative programme for construction and opening of the new highway will be set out in the ES.
- 2.11.3. The planning permission is expected to include relevant and appropriate planning conditions to secure and control any required mitigation to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment.
- 2.11.4. In accordance with the EIA Regulations 2017, a cumulative effects scenario will be considered to assess the effect interactions of overlapping technical disciplines and in-combination effects associated with committed developments within the surrounding area.
- 2.11.5. Planning applications nearby, with the potential to have significant effects in-combination or cumulatively with the development, are detailed within **Chapter 8: Cumulative Effects** of this Scoping Report.

## 2.12. ALTERNATIVES

- 2.12.1. Schedule 4, Paragraph 2 of the EIA Regulations 2017 states that an ES should include:  
*'a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed*

*project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects’.*

- 2.12.2. To accord with the EIA Regulations 2017 the following ‘alternatives’ will be considered within the ES.
- Alternative layout and design iterations; and
  - ‘Do Nothing’ scenario.
- 2.12.3. The consideration of alternatives to be set out in the ES will also report the ‘Do nothing’ scenario, which will consider the missed opportunities or avoidance of likely significant environmental effects associated with the scheme.

## **2.13. INTERACTION BETWEEN EIA, WFD AND HRA**

- 2.13.1. The Water Framework Directive (WFD) is not relevant for the scheme as there are no main rivers within the site, and the scheme would not affect the quality of the WFD water bodies or to stop them from achieving their WFD objectives. Any potential effects on the water quality should be mitigated in with design.
- 2.13.2. The need for a HRA screening is determined in accordance with the distance Natura 2000 sites are from the scheme, with 10km being the cut-off for most sites. For sites for which bats are qualifying features, this distance is extended to 30km because of the long distances these animals can travel to foraging areas.
- 2.13.3. Further information (wintering bird surveys) is required to inform the screening with respect to the following Natura 2000 sites:
- Pagham Harbour Special Protection Area (SPA), located approximately 7.6km South-west from the Site.
  - Chichester and Langstone Harbours Ramsar site and SPA, located approximately 10km south-west from the Site.
- 2.13.4. The Preliminary Ecological Appraisal (PEA) (**Appendix D**) includes the HRA Screening for further Natura 2000 sites listed in **Table 6.1**, which are located up to 10km and up to 30km where bats are a qualifying feature from the scheme.
- 2.13.5. Following the recent Court of Justice of the European Union ruling in April 2018 it is no longer considered appropriate for indirect effects on European sites, such as the propensity for a scheme to cause pollution, to be screened out.
- 2.13.6. The Court has ruled that pollution control measures should be considered as mitigation, rather than a component part of a scheme, and therefore should be considered at Habitats Regulations Assessment Stage 2 Appropriate Assessment.
- 2.13.7. Natural England has confirmed that this is their understanding of the situation in their own guidance.
- 2.13.8. Consequently, there may be a further requirement to revise the HRA Screening for each Natura 2000 site, where the findings of the Air Quality Assessment indicate there is the potential of the scheme to cause pollution which may affect the integrity of the Natural 2000 site.
- 2.13.9. The HRA screening of each Natura 2000 site will provide the consenting authority with sufficient information to decide whether the scheme may have a significant effect on the integrity of the Natura 200 sites.
- 2.13.10. Whilst the over-arching objectives of EIA, and HRA are similar, their scope, level of detail and terminology vary. As such, these processes will be undertaken separately. However, the scope presented within this EIA Scoping Report has been developed to ensure that the needs of these processes have been considered to ensure a coordinated assessment.



## 3. TOPICS SCOPED OUT OF EIA

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### 3.1. INTRODUCTION

3.1.1. The environmental disciplines for which no likely significant environmental effects have been identified are:

- Archaeology and Built Heritage;
- Population and Health;
- Ground Conditions and Contamination;
- Water Resources, Flood Risk, Groundwater and Drainage;
- Material and Waste;
- Climate;
- Transport and Access;
- Risk of Major Accidents and/or Disaster; and
- Heat and Radiation.

### 3.2. ARCHAEOLOGY AND BUILT HERITAGE

3.2.1. There are 26 listed buildings within 1km of the scheme, which include the Grade II\* Parish Church of St George.

3.2.2. The remaining listed buildings are Grade II, which include: houses, cottages, farm buildings and memorials. Twenty-four of the listed buildings are located in Eastergate and Westergate, one in Barnham and one on Choller Farm (east of the scheme).

3.2.3. The Eastergate (Church Lane) and Eastergate Square Conservation Areas are both located approximately 430m south-east of the scheme, within which there is a concentration of listed buildings.

3.2.4. No significant effects would occur on listed buildings due to the lack of views from the assets to the sites, due to intervening built form and topography.

3.2.5. There are no World Heritage Sites, Scheduled Monuments, Registered Battlefields, or registered Parks and Gardens within or near to the site.

3.2.6. There are Archaeological Notification Areas (ANAs) in this part of West Sussex, but none within the site.

3.2.7. Whilst significant effects are unlikely on archaeology there is still potential for currently unknown archaeological assets within the site. However, it is considered that the value/importance of any (currently unknown) archaeological assets that may exist, coupled with the magnitude of impact, would still not be sufficient for significant effects to arise.

3.2.8. It is proposed that the planning application would be supported by Archaeological Desk Based Assessment.

3.2.9. Depending on the outcome of the ADBA some site-based investigation such as trial evaluation trenches/trial pits may be needed to clarify the archaeological potential of the site.

3.2.10. Mitigation measures may include design adjustments to allow assets to be protected and retained within the site. Where this is not feasible, assets would be investigated and recorded before and during development.

3.2.11. If considered necessary, an archaeological watching brief may also be secured by planning condition.

- 3.2.12. A heritage statement will not be prepared as listed assets and conservation areas would not be materially affected by the scheme.
- 3.2.13. Further justification for scoping archaeological and cultural heritage out of further assessment is presented in
- 3.2.14. **Table A-1 in Appendix A.**

### **3.3. POPULATION AND HEALTH**

- 3.3.1. Based on baseline information collated to date, no significant adverse environmental effects are expected to arise on population and health.
- 3.3.2. The scheme will bring benefits to the area in regard to employment opportunities (during construction), reduced driver stress and delay and improved connectivity, although these will not be significant benefits.
- 3.3.3. Only private land would be lost.
- 3.3.4. Whilst the amenity of Footpath 318 would be diminished the scheme would be designed with a crossing to allow the users of the footpath to cross the road.
- 3.3.5. During construction, human health may be affected from increased noise and dust levels and air pollution from construction traffic. These would be temporary and controlled by adherence to environmental legislation and good practice guidance, as set out in a Construction Environmental Management Plan, which can be secured with planning condition.
- 3.3.6. Any potential impacts on human health from air quality and noise will be considered as part of these assessments.
- 3.3.7. Provision would be made within the design for cyclists and pedestrians and will consider inclusive design. This will be set out in the Design and Access Statement.
- 3.3.8. Further justification for scoping population and health out of further assessment is presented in **Table A-2 in Appendix A.**

### **3.4. GROUND CONDITIONS AND CONTAMINATION**

- 3.4.1. Made Ground is anticipated to be present in the study area, associated with the infilled gravel pit, the original construction of the A29, the railway line and neighbouring developments. Made Ground is less likely to be within the agricultural fields. There may be asbestos containing material (ACM) within building fabric of the buildings to be demolished.
- 3.4.2. The Agricultural Land Classification (ALC) system<sup>4 5</sup> classifies land into five grades, (1-5), with Grade 3 subdivided into 3a and 3b. The 'best and most versatile agricultural land' is defined as Grades 1, 2 and 3a by the NPPF and Planning Practice Guidance. The available ALC mapping (1:250,000) scale produced by Natural England shows that the majority of the scheme comprises Grade 1 land, which is surrounded by Grade 2 and 3 land (Grade 3 is not subdivided).
- 3.4.3. Based on the baseline information collated to date, there is considered potential for effects on ground conditions and contamination to occur during construction through contaminants within Made

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<sup>4</sup> Ministry of Agriculture, Fishery and Food (1988) Agricultural Land Classification of England and Wales [online]. Available at: <http://publications.naturalengland.org.uk/publication/6257050620264448>

<sup>5</sup> Natural England (2012) Agricultural Land Classification: protecting the best and most versatile agricultural land [online]. Available at: <http://publications.naturalengland.org.uk/publication/35012>

Ground, ACM in buildings to be demolished and through potential mobilisation of contaminants into controlled waters.

- 3.4.4. However, through the implementation of avoidance and mitigation measures, it is expected that adverse effects can be suitably reduced as to be not significant.
- 3.4.5. During operation of the scheme no significant environmental effects are anticipated as the NPPF requires newly developed or redeveloped sites to be 'suitable for use' in relation to ground contamination. It is standard for managing unexpected contamination during construction to be attached to planning permission.
- 3.4.6. Therefore, risk associated with contaminated land would be appropriately addressed to meet this requirement.
- 3.4.7. A Phase 1 Contaminated Land Assessment will be provided with the application.
- 3.4.8. It is to be discussed as to whether an Agricultural Land Assessment is required, considering the loss of BMV land.
- 3.4.9. A Preliminary Sources Study Report (PSSR) has already been completed as a DMRB requirement of developing a highways scheme and the risk assessment indicates that onsite assessment is also required. The results of this will also be provide in support of the application.

### **3.5. WATER RESOURCE, FLOOD RISK, GROUNDWATER AND DRAINAGE**

- 3.5.1. The site is located within Flood Zone 1 which is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
- 3.5.2. The design of the scheme would provide sufficient flood risk and drainage mitigation
- 3.5.3. The application of groundwater monitoring, good construction practice and discharge locations within a sustainable drainage design would avoid significant impacts in terms of construction and operational phase groundwater quality and quantity effects.
- 3.5.4. Therefore, significant impacts on the flood risk, drainage and the water environment are not likely to be present.
- 3.5.5. The application will be supported with a Flood Risk Assessment and Surface Water Drainage Assessment.

### **3.6. WASTE AND MATERIALS**

- 3.6.1. The operation and maintenance of the existing A29 requires a small number of specialist components (i.e. light bulbs, signage, metal fencing and barriers), as well as some bulk products (i.e. asphalt for minor resurfacing). The existing A29 also generates a small amount of waste from minor repairs and maintenance, vegetation clearance and litter picking.
- 3.6.2. Baseline data indicates that total non-landfill capacity is likely to become an increasingly sensitive receptor in future.
- 3.6.3. No regional data for construction, demolition and excavation production or recovery rates are currently available for South East England. However, waste transfer, materials recovery and metal recycling in the South East of England shows the rate of waste recovery in the region has steadily risen over the past 16 years. Materials transfer rates have fluctuated since 2009 but has steadily increased and metal recovery shows a slightly upward projecting profile.
- 3.6.4. The availability of materials recovery infrastructure in South East England, and across England, suggests that there is strong potential to divert waste generated from the scheme away from landfill sites.
- 3.6.5. Using the baseline information collated to date, there is considered potential for effects on materials and waste to occur during the demolition, site remediation and preparation, construction and

operation and maintenance stages of the scheme. Specific design measures to avoid and mitigate adverse effects from material resource consumption and site arisings, and the generation and disposal of waste will be adopted i.e. sustainable sourcing of materials, resource optimisation, maximise the use of pre-fabricated structures and components and minimise the import and export of materials and waste. Given the nature of the scheme and following the implementation of these measures and other mitigation processes, it is anticipated that minimal quantities of material will be used and minimal waste will be produced.

### **3.7. CLIMATE**

- 3.7.1. According to information from the UKCP09 report on long term average observed climate variables over the period 1980-2010, the region is considerably drier than most parts of the UK, with the lowest monthly rainfall in July and the highest in October with snow confined to the months of November to April. Data also shows that the region is warmer than the UK average with July being the warmest month and February being the coolest month.
- 3.7.2. Although there is expected to be a minor increase during construction due to the presence of construction vehicles and plants, these effects will not be significant. These effects can be further reduced through mitigation such as minimising materials required, maximising the materials use, use locally sourced material and use more efficient construction vehicles and plants. During the operation of the scheme, the release of greenhouse gases will be similar to the concentration release now as the scheme will not result in a significant increase in traffic.

### **3.8. TRANSPORT AND ACCESS**

- 3.8.1. There are 10 PRoW within 1km of the scheme, however only one PRoW (318) which runs north to south from Eastergate Lane to Eastergate (a small road off the B2233 Barnham Road) will be intersected by the scheme. The remaining PRoW are located south-west of the scheme in Eastergate and Westergate. A crossing will be provided.
- 3.8.2. Public transport options include the Compass Travel 66 bus Bognor Regis loop via Yapton and the 85 bus from Arundel to Chichester via Barnham, and the Stagecoach 665 bus from Chichester to Westergate and 665 bus from Westergate to Wickborne. The east-west running West Coastway railway line is located approximately 800m south of the scheme and stops in Barnham. Buses 66, 85 and 665 routes all travel through Barnham, Eastergate and Westergate so the south of the scheme, and Bus route 658 travels along the A29 Fontwell Avenue to the east of the scheme. It is not anticipated that the public transport will be affected by the scheme.
- 3.8.3. A highways traffic model has been developed to forecast future levels of traffic on the highway network. The forecast year traffic models will be utilised for the assessment of road traffic effects in respect of local air quality and noise. The forecast traffic models include the predicted total future traffic generation on the local highway network including relevant committed developments within the local area, thus providing a quantitative cumulative transport, air quality and noise assessment. The cumulative assessment for these topics will therefore also be reported in their relevant topic chapter of the ES as it forms a modelling scenario of their effect assessment.
- 3.8.4. Effects relating to transport and access are not considered to be significant and are therefore scoped out of further assessment. However, a transport assessment, travel plan or transport statement will accompany the planning application in accordance with the Arun District Council Local Validation checklist.

### **3.9. RISK OF MAJOR ACCIDENTS AND/OR DISASTER**

- 3.9.1. As detailed within Schedule 3 of the EIA Regulations 2017, there is the requirement to consider the risk of major accidents and/or disasters relevant to the scheme.
- 3.9.2. Although there are extensive potential major accidents/disasters that could occur because of the scheme, the frequency of accidents/disasters are considered to be so low that the probability of

potential risks is highly unlikely. For proportionality, the evaluation process for such major accidents/disasters is not exhaustive, but are summarised below:

- Natural disasters arising from climatic occurrences (i.e. hurricanes) are of low probability due to the natural climatic condition of the UK within the global climate system;
- Natural disasters arising from specific geological events (i.e. earthquakes, tsunamis, volcanic incidents etc.) are low in probability due to the general absence of required geological conditions (i.e. area of tectonic plate interaction) within or near the UK. Although earthquakes have occurred within the UK the magnitude of such events have generally been low; and
- Major accidents associated with future roads and transport methods associated with the scheme; however, such elements would be designed to applicable safety standards thereby reducing the potential risk of major accidents.

3.9.3. The scheme is located outside of a flood zone, however there are small areas of Flood Risk Zone 2 and 3 (0.1%-1% and greater than 1% chance of flooding occurring each year respectively) to the west and south-west of the scheme. The Site is situated more than 5km from the coast and therefore there is no significant risk from coastal flooding or storm surges. Susceptibility of flooding associated with the drains at the Site will be assessed within Flood Risk Assessment (FRA).

3.9.4. WSCC has confirmed that there are Low and Medium Pressure Gas Pipelines within the Site, located along the A29 Fontwell Avenue, and B2233 Barnham Road and which intersect the red line boundary of the scheme. There are no High-Pressure Gas Pipelines within the red line boundary. The Site does not intersect any other HSE major hazard sites.

3.9.5. Effects related to the risk of major accidents and/or disasters are not considered to be significant and are therefore scoped out of further assessment.

### **3.10. HEAT AND RADIATION**

3.10.1. Schedule 4 Part 5 of the EIA Regulations 2017 details the requirement for a description of the likely significant effects on the environment resulting from, amongst others, the emission of heat and radiation. The scheme is a major highways improvement project as described in Section 1 of this Scoping Report. Due to the scale and nature of the scheme, it is not anticipated that there will be any significant sources of heat or radiation during construction or operation of the road. The consideration of heat and radiation emissions has therefore been scoped out of further assessment.

## 4. LANDSCAPE AND VISUAL IMPACT

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### 4.1. PROPOSED STUDY AREA

- 4.1.1. In accordance with the 2018 Constraints Report, an initial study area of 2km is proposed, extending either side of the centre line of the scheme in order to identify those likely sensitive receptors affected by the scheme. This will be reviewed further and potentially refined during the course of the initial stages of the Landscape and Visual Impact Assessment (LVIA), during which the Zone of Theoretical Visibility (ZTV) will be defined. By definition, visual effects can only occur where the scheme can be seen.
- 4.1.2. Experience from similar developments of this nature and scale, suggest that significant landscape and visual effects are unusual beyond about 1km, except where traffic noise affects the perception of tranquillity. This is supported by the findings of the initial site walkover survey carried out in July 2018, which noted that the ZTV associated with the scheme is likely to be relatively small, due to the site being screened by the surrounding built form, along its periphery and intervening features. Long distance views from areas of higher ground located to the north within the South Downs National Park may be discernible. However, given the distance of separation between the receptor and the scheme and the presence of existing built form within the middle ground of all existing views, the significance of effect will likely be reduced.
- 4.1.3. The study area for the landscape assessment is initially defined by the area from which the scheme may be visible (as described above), but will further include the full extent of areas of identified landscape character (aside of scheme visibility) which are potentially subject to effects. Due to the location of the scheme on the periphery of the South Downs National Park, there requires a consideration of the potential effects of the scheme in respect of the full extent of the designation.

#### **Arboriculture**

- 4.1.4. The arboriculture study area is defined as the area within which arboricultural features may experience effects associated with the construction of the scheme.
- 4.1.5. The arboricultural study area is defined as the scheme footprint plus a 30m buffer. This buffer ensures that arboricultural features which are outside the footprint of the scheme but whose root protection areas may be affected by construction activities are recorded and considered. The 30m buffer accounts for the maximum size of a root protection area as specified in British Standard BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* and for the much larger root protection area which may be associated with veteran trees<sup>6</sup>.

### 4.2. BASELINE CONDITIONS

- 4.2.1. The scheme is located to the south of the South Downs National Park, within a transitional landscape, and to the north of the coastal town of Bognor Regis within the upper coastal plains approximately 1.4km to the south of the South Downs National Park. The area is characterised by a mix of small to medium sized pasture containing traditional orchards and woodland, and arable and open areas including market gardening, interspersed by settlements and scattered farmsteads. Around the periphery of the Site are the settlements of Barnham, Eastergate, Fontwell and Walberton. All four settlements are linear in nature located on either side of the roads that traverse through them. The Site is bound on all four sides by the existing road network, which comprises

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<sup>6</sup> Read, H. (2000). *Veteran Trees: A guide to good management*. English Nature. Peterborough

Eastergate Lane, Barnham Lane, Barnham Road and Fontwell Avenue (north, east, south and west respectively). Clear views of the higher ground to the north are discernible, from within the character area.

- 4.2.2. The Site is currently unlit; however, it is anticipated that the Site experiences a degree of light spill due to street lighting installed along the B2233. Given the general absence of lighting within the Site, the lighting environment within the Site is considered to be indicative of an E2 Environmental Zone ('low district brightness').

### **Landscape Designations**

- 4.2.3. The scheme is located approximately 1.4km to the south of the South Downs National Park. In 2016, the South Downs National Park was designated as an International Dark Sky Reserve<sup>7</sup>.
- 4.2.4. To the east and north of the scheme, located within the wider 2km study area, are a number of areas of Ancient Woodland; none of which would be directly affected by the scheme alignment.

### **National Landscape Characterisation**

- 4.2.5. The scheme is located within the following Natural England's National Character Areas (NCA):
- NCA 125 – South Downs; and
  - NCA 126 – South Coast Plain.

### **Regional and Local Landscape Characterisation**

- 4.2.6. The following landscape character assessments provide greater detail at a local level, and will be used to further inform the baseline landscape character description for the assessment.

#### **West Sussex County Council – Landscape Character Assessment 2003<sup>8</sup>;**

- 4.2.7. The study area is covered by the following identified Landscape Character Areas, identified at a County level:
- Character Area SC7 Halnaker Upper Coastal Plain;
  - Character Area SC8 Fontwell Upper Coastal Path; and
  - Character Area SC9 Chichester to Yapton Coastal Plain
- 4.2.8. At a local level the character of the landscape is described within two separate studies; identified as the 2006 Arun Landscape Study<sup>9</sup>; and the 2011 South Downs Integrated Landscape Character Assessment<sup>10</sup>.

#### **Arun Landscape Study<sup>11</sup>, 2006;**

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<sup>7</sup> An international designation for public or private land possessing an exceptional or distinguishable quality of starry nights and nocturnal environmental that is specifically protected for its scientific, natural, educational, cultural, heritage and/or public enjoyment.

<sup>8</sup> West Sussex County Council Landscape Character Assessment 2003 -<https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/landscape-character-assessment-of-west-sussex/> (Sourced November 2018)

<sup>9</sup> Arun Landscape Study <https://www.arun.gov.uk/download.cfm?doc=docm93ijim4n3578.pdf&ver=3232> (Sourced November 2018)

<sup>10</sup> South Downs Integrated Landscape Character Assessment 2011 <https://www.southdowns.gov.uk/planning/planning-advice/landscape/> (Sourced November 2018)

<sup>11</sup> Arun Landscape Study <https://www.arun.gov.uk/download.cfm?doc=docm93ijim4n3578.pdf&ver=3232> (Sourced November 2018)

4.2.9. The study area encompasses the following Local Landscape Character Areas (LLCA), identified at a local level, along with an indication of the character areas' capacity to accommodate future development:

4.2.10. Within the report, landscape capacity is defined as the extent to which a particular area or type of landscape is able to accommodate change without significant effects on character; or overall change in landscape type. It reflects the inherent sensitivity of the landscape itself and its sensitivity to the development in question; and the value attached to the landscape, or to specific elements within it.

- No 11 – Lidsey Coastal Plain (Low/Medium);
- No 12 – Park Farm Upper Coastal Plain (Low);
- No 13 – Westergate Western Fringe (Medium/High);
- No 14 – Westergate Eastern Fringe (Low/Medium);
- No 15- Norton Upper Coastal Plain (Low);
- No 16 – Fontwell-Eastergate Mosaic, (Medium);
- No 17 – Westergate – Barnham Coastal Plain (Low/Medium);
- No 18 – Ryebank Rife, (Low Medium);
- No 22 – Barnham – Yapton Coastal Plain (Medium/High);
- No 23- Walberton Upper Coastal Plain (Low);
- No 24 – Fontwell Common (Medium); and
- No 25 – Avisford Park (Low).

**2011, South Downs Integrated Landscape Character Assessment<sup>12</sup>;**

4.2.11. At its northern extent, the study area is located within the following two landscape character areas located within the South Downs National Park.

- B – Wooded Estate Downland landscape type – B1 Goodwood to Arundel Wooded Estate Downland character area; and
- Q – Upper Coastal Plain landscape type – Q1 South Downs Upper Coastal Plain.

4.2.12. Landscape Character Areas are presented in **Figure 6-1** in **Appendix A**.

**Visual Baseline**

4.2.13. The following visual receptors have been identified within the 2km study area, and would be considered as part of the LVIA:

- Residential properties located along Eastergate Lane, Murrell Gardens, Ewens Gardens, Barnham Road, Collins Close, Fontwell Ave and users/visitors of Wandleys Lane Caravan Park (approximately 400m north of the scheme);
- Users of PRoW, primarily users of PRoW ref 318. Other PRoW, recorded within the 2km study area include, PRoW No. 232, 297, 303, 315, 317, 319, 320 and 321;

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<sup>12</sup> South Downs Integrated landscape Character Assessment 2011 <https://www.southdowns.gov.uk/planning/planning-advice/landscape/> (Sourced November 2018)



- Users of the existing road network, including Fontwell Ave (A29) to the west, Eastergate Lane to the north, Barnham Road to south and Barnham Lane to the east;
- Representative Viewpoint No.11 & 66 within the South Downs National Park Viewshed Characterisation; and
- Nearby community facilities including the Croft Surgery (approximately 600m south of the scheme), and Eastergate Parish Hall (approximately 480m south of the scheme).

## 4.3. POTENTIAL IMPACTS

### Construction

- Loss of existing vegetation structure including hedgerows and scattered blocks of woodland, resulting in disruption to landscape pattern and land cover, and the opening up of views through the removal of screen planting;
- Loss of tranquillity, within the local area, associated with construction traffic and machinery;
- Loss and modification of existing property boundaries;
- Temporary localised landscape effects from the presence of construction compounds and temporary spoil heaps;
- Securement and implementation of temporary fencing and hoarding; and
- Demolition of Folly Foot Farm.
- Potential impacts relate to the loss of, or damage to, high and moderate quality arboricultural features. Of specific importance will be the potential for adverse effects to veteran trees.
- Effects associated with arboricultural features covered by a Tree Preservation Order may or may not be significant and will be directly related to the current quality of the trees which are affected. This is because, as living organisms, the quality of trees can be rapidly degraded by various biotic and abiotic factors thereby rendering them unworthy of statutory protection.

### Operation

- The introduction of a linear feature within a rural setting, and permanent change to the land use;
- Alteration to existing landscape pattern through the addition of a strong linear feature that cuts across the 'grain' of the landscape;
- The scheme would directly sever PRoW 318;
- Permanent localised loss of tranquillity within the affected area;
- The scheme would permanently change the nature of the view for those residential properties that directly overlook the scheme, including increasing the visual awareness of the road network within views from nearby residential properties; and
- Introduction of light pollution from vehicles at night, into a previously unlit area including the addition of street lighting which is proposed at 30m intervals along the entire length of the scheme, and on either side of the carriageway.

## 4.4. PROPOSED MITIGATION

- 4.4.1. Mitigation measures to be considered are summarised below. These incorporate a range of measures to integrate the scheme into the surrounding landscape, thereby limiting effects on landscape character and visual receptors. The mitigation measures summarised are not exhaustive. Landscape and visual mitigation shall be reviewed and discussed with key stakeholders and the design team, to help further inform the identification and agreement of mitigation measures during both the operational and construction phase of the works.

### Construction

- Design progression of the scheme alignment (in accordance with DMRB Volume 10 design advice) to ensure as best fit as possible with the scale and character of the landscape setting;
- Retain where possible existing vegetation;
- Use of directional lighting where required for construction activities including the area temporarily used as the site compound, reducing risk of potential night time visual effects; and
- Where appropriate, temporary screen mounds or high-quality hoardings would be installed to screen ground level clutter and construction compounds.
- Mitigation during construction would include the identification of construction exclusion zones around retained arboricultural features. These construction exclusion zones would be protected in accordance with recommendations provided within British Standard BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*.

### Operation

- Include appropriate boundary treatments including provision for noise mitigation features, principally where the scheme affects property boundaries along Murrell Gardens and Ewens Gardens;
- Careful consideration of the design and siting of new lighting and signage to minimise visual intrusion and light spill into the surrounding area;
- There is a variety of existing vegetation associated with the nearby residential receptors and the intervening landscape, thereby providing an element of screening between existing residential properties and any proposed lighting, which would be retained. In addition, landscaping is proposed around the edges of the scheme which is anticipated to provide a further element of intervening screening of operational lighting.
- Replacement planting of existing vegetation lost to the scheme during the construction phase of the works. An appropriate planting strategy would be proposed that would respect the local character of the landscape and help to integrate the scheme within the landscape; selective placement of planting would provide a visual screen function for local views. It is envisaged that the planting strategy would incorporate native species mixes appropriate to the location. Where possible, the design would help provide links between areas of fragmented habitat to be retained including the provision of a Green Corridor which will provide a wildlife corridor and link habitats; and
- Screen planting around junctions.
- Operational mitigation would take the form of post-development tree planting and would be specified by a landscape specialist. In addition, where possible, trees would be retained to form the Green Corridor along the scheme alignment.

## 4.5. DESCRIPTION OF LIKELY EFFECTS

4.5.1. **Table 4-1** outlines the potential effects which may be significant.

**Table 4-1 – Environmental effects associated with Landscape Character and Visual Amenity**

EFFECT	RECEPTOR	PHASE
Permanent change to land use within the character area, resulting in a further decrease in tranquillity within the area,	LLCA No 16 Fontwell-Eastergate Mosaic.	Construction and Operation

EFFECT	RECEPTOR	PHASE
loss of established vegetation. Temporary inclusion of landscape elements not currently prominent within the character area, during the construction phase of the works. However, the significance of effect is decreased given the presence of existing roads within the character area.		
Change to the nature of the existing view, following the demolition of Folly Foot Farm.	Residential receptor – Northfields Farm off the A29 Fontwell Avenue.	Construction and Operation
Change to the nature of the existing view, through the introduction of a linear feature within a rural setting.	Residential receptors located along Murrell Gardens and Ewens Gardens.	Construction and Operation
Introduction of light pollution from vehicles at night, into a previously unlit area including the addition of Street lighting is proposed at 30m intervals along the entire length of the main line, on either side of the carriageway.	Residential receptors located along Murrell Gardens and Ewens Gardens, Eastergate Lane, the A29 Fontwell Avenue, and the B2233 Barnham Road.	Operation
Change to the nature of the existing view along PRoW. It is assumed that the PRoW would be temporarily stopped up during the construction phase.	Users of PRoW ref 318.	Operation

4.5.2. Overall disturbance and/or nuisance from artificial lighting and changes to sky glow are not considered to be likely nor significant and are therefore scoped out of further assessment.

4.5.3. Landscape mitigation planting would provide beneficial effects but, as trees take many years to establish and grow, these are unlikely to compensate for the loss of high and moderate quality features which may be present within the area identified as traditional orchard or elsewhere.

## 4.6. PROPOSED ASSESSMENT METHODOLOGY

4.6.1. The LVIA will be undertaken in accordance with Interim Advice Note (IAN) 135/10, with further guidance being sought from the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3), where the latter places greater emphasis on using professional judgement in the explanation and justification for assessment criteria and conclusions.

4.6.2. The following key documents will inform the LVIA:

- Natural England National Landscape Character Area Profiles<sup>13</sup>;
- West Sussex County Council – Landscape Character Assessment 2003<sup>14</sup>;
- Arun Landscape Study 2006<sup>15</sup>;
- West Sussex County Council Local Distinctiveness Study<sup>16</sup>;
- West Sussex County Council Historic Town Characterisation<sup>17</sup>;
- South Downs Integrated Landscape Character Assessment (ICLA) 2011<sup>18</sup>; and
- South Downs National Park Viewshed Characterisation & Analysis<sup>19</sup>.

- 4.6.3. For the purpose of this assessment, local landscape character assessments are likely to be of sufficient scale and detail in order to identify the resource and quality of the landscape within the study area. However, if considered necessary, then further refinement would be undertaken at a scale relevant to the study area.
- 4.6.4. Visualisations to accompany the LVIA will be produced in line with industry best practice guidance available at the time. For the purpose of the assessment, such guidance will include:
- Landscape Institute, Technical Guidance Note 02/17 Visual Representation of Development Proposals (March 2017); and
  - Landscape Institute, Advice Note 1/11 Advice on Photography and Photomontage (amended 2013) which is currently undergoing further review.
- 4.6.5. Details of the proposed representative viewpoints are presented within **Table 4-2** below and **Appendix B**. Prior to undertaking the LVIA, consultation with statutory consultees will be carried out in order to confirm the appropriateness of the proposed representative viewpoint locations.

**Table 4-2 – Proposed Representative Viewpoint Locations**

NUMBER	RECEPTORS
1	View looking south, at the northern extent of PRoW ref 318, off Eastergate Lane. Viewpoint representative of users of PRoW (High), users of Eastergate Lane (Low) and nearby residential properties (High)
2	View looking north-west from PRoW ref 318 – Viewpoint representative of users of PRoW 318 (High)

<sup>13</sup> Natural England National Character Area profiles -<https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles> (Sourced November 2018)

<sup>14</sup> West Sussex County Council Landscape Character Assessment 2003 -<https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/landscape-character-assessment-of-west-sussex/> (Sourced November 2018)

<sup>15</sup> Arun Landscape Study <https://www.arun.gov.uk/download.cfm?doc=docm93ijm4n3578.pdf&ver=3232> (Sourced November 2018)

<sup>16</sup> West Sussex County Council local distinctiveness study <https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/local-distinctiveness-study-of-west-sussex/> (Sourced November 2018)

<sup>17</sup> West Sussex County Council Historic Town Characterisation <https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/historic-town-characterisation/> (Sourced November 2018)

<sup>18</sup> South Downs Integrated Landscape Character Assessment 2011 <https://www.southdowns.gov.uk/planning/planning-advice/landscape/> (Sourced November 2018)

<sup>19</sup> <https://www.southdowns.gov.uk/planning/national-park-local-plan/evidence-and-supporting-documents/viewshed-analysis/>

NUMBER	RECEPTORS
3	View looking east from PRoW 318 – Viewpoint representative of users of PRoW 318 (High)
4	View looking in a northerly direction at the southern extent of PRoW 318. Viewpoint representative of users of PRoW 318 (High), and rear gardens of nearby residential properties (High)
5	View looking north, from Barnham Road. Viewpoint representative of users of Barnham Road (Low), Fordingbridge Industrial Site (Low), and rear gardens of nearby residential properties (High)
6	View looking west along Barnham Road, at the junction of Downview Road. Viewpoint representative of users of Barnham Road (Low) and the frontage of nearby residential properties (High)
7	View looking east along Barnham Road, from the southern extent of PRoW 318. Viewpoint representative of users of Barnham Road (Low) and frontages of nearby residential properties (High)
8	View looking west from Chantry Mead. Viewpoint representative of views from the rear of residential properties (High)
9	View looking north-east from The Croft Surgery car park (600m south of the scheme). Viewpoint representative of nearby residential properties (High)
10	View looking north from PRoW ref 321. Viewpoint representative of users of PRoW 321 (High)
11	View looking south-east from South Downs National Park viewshed No. 11 – St Roches – Hill – The – Trundle. Viewpoint is representative of visitors to the National Park, identified viewpoint (High)
12	View looking south from South Downs National Park Viewshed No.66 – Halnaker Windmill. Viewpoint representative of visitors to the National Park, identified viewpoint (High)

4.6.6. The arboricultural survey and subsequent impact assessment would be undertaken in accordance with British Standard BS5837: 2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*.

#### ASSESSMENT CRITERIA

4.6.7. The guidance in IAN 135/10 or any subsequent update of this document will be used to determine whether the scheme effects are considered significant. Modification of significance criteria may be made in line with GLVIA3 guidance, where it is considered that the modification would benefit the assessment process and help inform the assessment outcomes.

#### ASSUMPTIONS AND LIMITATIONS

4.6.8. Due to the distance of separation between the scheme and the South Downs National Park it is not considered that the scheme will have a significant effect on the National Park’s International Dark Sky Reserve designation.

- 4.6.9. Every effort will be made to access all sensitive receptor locations in order to make an informed assessment judgement of the potential effects that would be experienced from that location. However, in instances, due to lack of access, a professional judgement may have to be made, based on available information.
- 4.6.10. Every effort will be made to access all required areas of land to facilitate the proposed species-specific surveys. However, in instances where, due to lack of access, a professional judgement may have to be made, based on available information.
- 4.6.11. It is likely that the arboricultural survey results and subsequent impact assessment would also be presented within **Chapter 5: Ecology and Nature Conservation**.

## 4.7. ASPECTS SCOPED OUT OF FURTHER ASSESSMENT

**Table 4-3 – Aspects scoped out of further assessment**

Aspect scoped out	Phase	Justification
Artificial lighting	Construction and operation	Existing residential receptors are anticipated to already be subjected to a degree of light spill and experience a lighting environment due to the lighting installations associated with the local road network.
Sky glow	Construction and operation	It is assumed that all lighting installations will be designed to best practice guidance, including the ILP Guidance Notes and CIE (1997) 126: Guidelines for Minimising Sky Glow, which includes the requirement to minimise upwards light emitted and contribution towards sky glow.

## 5. ECOLOGY AND NATURE CONSERVATION

### 5.1. PROPOSED STUDY AREA

5.1.1. The PEA focussed upon a survey area defined as the centre line of the scheme plus a 250m buffer. In addition, a range of study areas were applied to search for designated sites, Habitats of Principal Importance (HPIs) and waterbodies within the surroundings, as described below.

5.1.2. With regards the desk-study, searches have been undertaken at various radii from the scheme (as drawn in March 2018) to identify designated statutory and non-statutory sites for nature conservation, as follows:

- Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) of European importance and internationally designated Ramsar sites within 10km;
- Natura 2000 sites which have bat species as qualifying interests within 30km;
- All other UK statutory sites within 2km; and
- UK non-statutory sites within 2km.

5.1.3. The arboricultural study area includes the footprint of the scheme plus a 30m buffer. This buffer ensures that arboricultural features which are outside the footprint of the scheme but whose root protection areas may be affected by construction activities are recorded and considered. The 30m buffer accounts for the maximum size of a root protection area as specified in British Standard BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* and for the much larger root protection area which may be associated with veteran trees<sup>20</sup>.

### 5.2. BASELINE CONDITIONS

5.2.1. WSP undertook a PEA for the scheme involving an extended Phase 1 Habitat Survey and a Desk Study, in September 2018, based upon published guidance (CIEEM, 2017). The PEA is presented for reference at **Appendix D**.

#### Designated Wildlife Sites

5.2.2. **Table 5-1** below summarises the findings of the desk study for designated wildlife sites.

**Table 5-1 – Designated Wildlife Sites**

Site Name	Designation	Approximate Distance and Orientation from Site
<b>International Statutory Designated Sites</b>		
Pagham Harbour	Ramsar and SPA	7.6 km south-west
Duncton to Bignor Escarpment	SAC	7.7 km north-east

<sup>20</sup> Read, H. (2000). *Veteran Trees: A guide to good management*. English Nature. Peterborough

Site Name	Designation	Approximate Distance and Orientation from Site
Chichester and Langstone Harbours	Ramsar	10.0 km south-west
Solent Maritime	SAC	10.0 km south-west
Chichester and Langstone Harbours	SPA	10.0 km south-west
Singleton and Cocking Tunnels	SAC	11km north-west
The Mens	SAC	17km north-east
Ebernoe Common	SAC	19km north
<b>UK Statutory Designated Sites</b>		
The Brooks (Bersted Brooks)	Local Nature Reserve	1.3 km south
<b>UK Non-Statutory Designated Sites</b>		
Fontwell Park Racecourse	Local Wildlife Site (LWS)	0.4km north
Barnham Road at Eastergate	Notable Road Verge (NRV)	0.4km south
Slindon Bottom	LWS	1.3km north
Brittens Lane	NRV	1.4km north-east

### Habitats of Principle Importance, Ancient Woodland and Waterbodies

- 5.2.3. Within a 2km search radius, there are 11 parcels of ancient woodland located north and north-east of the Site. Habitats of principle importance within 2km of the scheme include coastal and floodplain grazing marsh, deciduous woodland, semi-improved grassland (good quality), lowland meadows, lowland fens, and lowland calcareous grassland. Most notably is the area of traditional orchard that the scheme intercepts.
- 5.2.4. There are also approximately 3 waterbodies mapped within 500m of the scheme which may have potential to support great crested newt. This includes mapped ditches that may hold standing water at times.

### Habitats within the Survey Area

- 5.2.5. The Phase 1 habitat survey identified a variety of managed and semi-natural habitats within 250m of the scheme. These included a mixture of woody habitats dominated by traditional orchard with broad-leaved woodland patches and scrub. Grassland paddocks were also recorded, as well as a number of hardstanding tracks and pathways, with associated hedgerows and scattered mature trees.



5.2.6. The orchard, hedgerow and woodland habitats are considered to be habitats of principle importance. Orchard and wooded habitat dominates much of the north of the area surveyed.

### Protected/Notable Species

5.2.7. A protected species assessment was undertaken to extend the Phase 1 habitat survey, in line with published guidance (CIEEM, (2017), and species/group specific guidance referenced in **Appendix D**). This identified the potential for the survey area to support a range of protected and notable species, as detailed in **Table 5-2**.

**Table 5-2 – Protected and Notable Species Potential**

Species/Species Group	Potential within Survey Area
Roosting Bats	Trees within the orchard, woodland and hedgerows may support potential roost features (PRFs) for bats. Several buildings in the north east which are to be demolished may also support roosting bats.
Foraging and Commuting Bats	Habitats such as orchard, woodland, scrub and rough grassland may support significant numbers/ diversity of invertebrates for bats to feed on. Linear features such as woodland/ orchard edges, hedgerows and tree lines may provide commuting features.
Badger	Badger are known to utilise the orchard/scrub/ grassland mosaic area for sett creation and foraging, and other habitats may be used.
Hazel Dormouse	The dense woody vegetation including woodland, orchard, scrub and hedgerow is suitable for dormouse foraging, nesting and hibernating.
Breeding Birds	A range of breeding birds, potentially including protected/ notable species, may use woody vegetation such as scrub, hedgerows, woodland and orchard.
Wintering Birds	Wintering birds may forage in the open grassland areas.
Reptiles	Habitats including long grassland, tall ruderal and scrub, as well as woodland and orchard, provide foraging and basking opportunities for reptiles. Hibernation opportunities are likely to be present in orchard, woodland and hedgerows.
Great crested newt	Newts may utilise the survey area including all vegetated habitats in their terrestrial phase. No waterbodies suitable for breeding are present.
Invertebrates	Protected and notable invertebrates may utilise the orchard habitat which has standing and lying deadwood, as well as rotting fruit and flowers.

### Tree Preservation Orders and Conservation Areas

5.2.8. Arun District Council is responsible for implementing any legal controls imposed through Tree Preservation Orders and conservation areas within the study area. The statutory status of

arboricultural features within the study area was checked using the Council’s online mapping service on 25 November 2018.

- 5.2.9. The arboricultural study area does not encompass any conservation areas although a small section is covered by Tree Preservation Order ‘Eastergate No. 1/69’. It is not possible to state with any certainty whether any protected trees exist within the study area as the Order was made in 1969 and may only apply to trees which have subsequently been removed.

**Notable, Ancient and Veteran Trees**

- 5.2.10. The presence of locally notable, ancient and veteran trees within the study area was checked using the Woodland Trust’s Ancient Tree Inventory on 25 November 2018. Two veteran trees have been identified within the study area, one of which is located within the footprint of the scheme.

**Ancient Woodland, Wood Pasture and Traditional Orchards**

- 5.2.11. The presence of ancient woodlands, wood pasture and traditional orchards within the study area was checked using Natural England’s Multi Agency Geographical Information for the Countryside (MAGIC) map on 25 November 2018.
- 5.2.12. There are no areas of identified ancient woodland or wood pasture within the study area. However, approximately 6.4ha of traditional orchard has been shown to exist covering land which is mainly located towards the north-western end of the scheme.
- 5.2.13. Whilst traditional orchards are predominately a habitat designation they are of potential arboricultural interest as they highlight areas within which ancient, veteran or rare fruit trees may exist. Although recorded as a designation of ‘low confidence’ and described as ‘young trees in gaps’, the possibility that some moderate or high value trees are present within the areas of traditional orchard cannot be fully discounted.

**Treed Areas**

- 5.2.14. The presence of treed areas within the study area was identified using aerial photography on 26 November 2018. Treed areas are those areas which appear to include trees but which are not covered by other designations.
- 5.2.15. There are approximately 6.5ha of treed areas within the study area. Whilst the overall quality and quantity of trees within this area is unknown, they have the potential to include a range of high, moderate and low-quality specimens. Where treed areas are located within the grounds of residential properties, there is potential for some roots to extend into the footprint of the scheme

**5.3. POTENTIAL IMPACTS**

- 5.3.1. Potential impacts are summarised in **Table 5-3** below.

**Table 5-3 – Potential ecological impacts**

FEATURE	POTENTIAL IMPACT	PHASE
Designated Sites	<p><b>Permanent and temporary land-take within the scheme footprint.</b></p> <p>There is the possibility that grassland within the survey area provides supporting habitat for wintering bird species for which Pagham Harbour SPA and Chichester and Langstone Harbour SPA are designated. Loss of this habitat may undermine these populations and thereby the</p>	Construction

	designated sites. This is to be confirmed with further survey for wintering birds between October and March.	
	<p><b>Compaction, pollution, runoff, disturbance and other direct effects to land adjacent/connected to the scheme footprint.</b></p> <p>Long-range pollutants, airborne or aquatic, may travel to and degrade designated sites near to roads affected by the scheme.</p>	Construction
	<p><b>Degradation through airborne or waterborne pollution</b></p> <p>Long-range pollutants, airborne or aquatic from vehicles using the scheme, may travel to and degrade locally designated sites near to the scheme. Construction traffic may affect local designated sites also.</p>	Operation
Habitats	<p><b>Permanent and temporary land take within the scheme footprint</b></p> <p>Orchard, woodland, trees and hedgerows would be removed by the scheme in varying amounts. Some would be permanently lost, some temporarily (e.g. for site compounds).</p>	Construction
	<p><b>Compaction, pollution, runoff, disturbance and other direct effects to land adjacent/connected to the scheme footprint</b></p> <p>Orchard, woodland, trees and hedgerows lie adjacent to the scheme and as such are at risk of degradation. Damage to overhanging branches, reduction of soil quality and pollution may all affect adjacent habitats if not managed.</p>	Construction
	<p><b>Degradation through airborne or waterborne pollution</b></p> <p>Orchard, woodland, trees and hedgerows lie adjacent to the scheme and as such are at risk of degradation via airborne and waterborne pollutants.</p>	Operation
Protected/ Notable Species	<p><b>Permanent and temporary land take within the scheme footprint</b></p> <p>Loss of habitats may mean loss of resources for protected/notable species such as breeding birds, bats, mammals, reptiles, amphibians and invertebrates.</p>	Construction
	<p><b>Compaction, pollution, runoff, disturbance and other direct effects to land adjacent/connected to the scheme footprint</b></p>	Construction

	Damage to habitats may mean loss of resources for protected/notable species such as breeding birds, bats, mammals, reptiles, amphibians and invertebrates.	
	<p><b>Habitat fragmentation (via loss)</b></p> <p>Damage to habitats may mean loss of resources for protected/notable species such as breeding birds, bats, mammals, reptiles, amphibians and invertebrates.</p>	Construction & Operation
	<p><b>Direct mortality during site clearance and construction</b></p> <p>Physical clearance works may injure or kill animals, resulting in death. Clearance may also result in death by predation or exposure.</p>	Construction
	<p><b>Disturbance from construction activities including noise, vibration, lighting and pollution</b></p> <p>Construction activities would disturb fauna to some degree. This is likely to restrict usage of habitats immediately adjacent to working areas reducing total available habitat and as such equivalent to temporary habitat loss. This could contribute to higher mortality rates.</p> <p>Breeding or resting places of individuals could be abandoned due to disturbance.</p>	Construction
	<p><b>Direct mortality during operational use</b></p> <p>Individual animals could be harmed during operation; for example, amphibians could be trapped within drainage systems, and badger may be hit by traffic.</p>	Operation
	<p><b>Direct disturbance from operational use</b></p> <p>Operational use could cause disturbance to fauna. In particular, any new lighting installed could negatively affect fauna such as bats, mammals and invertebrates.</p>	Operation
	<p><b>Degradation through airborne or waterborne pollution</b></p> <p>Damage to habitats may mean loss of resources for protected/notable species such as breeding birds, bats, mammals, reptiles, amphibians and invertebrates.</p>	Operation

5.3.2. Potential arboricultural impacts relate to the loss of, or damage to, high and moderate quality arboricultural features. Of specific importance will be the potential for adverse effects to veteran trees.

5.3.3. Effects associated with arboricultural features covered by a Tree Preservation Order may or may not be significant and will be directly related to the current quality of the trees which are affected. This is

because, as living organisms, the quality of trees can be rapidly degraded by various biotic and abiotic factors thereby rendering them unworthy of statutory protection.

## 5.4. PROPOSED MITIGATION

5.4.1. Mitigation measures to be considered are summarised in **Table 5-4**. These measures will be refined as designs are developed and additional ecological information becomes available.

**Table 5-4 – Mitigation measures**

Measure	Description	Timing/Process	Responsibility
<b>Construction Phase</b>			
Avoidance of notable habitats	<ul style="list-style-type: none"> <li>Selective design of scheme alignment to avoid the most valuable habitats as far as possible (e.g. veteran trees)</li> <li>Selective design of scheme cross-section to minimise land take in valuable habitats (e.g. orchard)</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary and pre-construction design</li> </ul>	<ul style="list-style-type: none"> <li>Design team in consultation with Ecology team</li> </ul>
Careful siting of works compound	<ul style="list-style-type: none"> <li>Select construction compound location carefully</li> </ul>	<ul style="list-style-type: none"> <li>Pre-construction</li> </ul>	<ul style="list-style-type: none"> <li>Design team and appointed contractor in consultation with Ecology team</li> </ul>
Robust pollution prevention strategy	<ul style="list-style-type: none"> <li>Pollution prevention strategy incorporated into the CEMP, with specific attention to airborne and waterborne pollution prevention</li> </ul>	<ul style="list-style-type: none"> <li>Pre-construction</li> </ul>	<ul style="list-style-type: none"> <li>Appointed contractor</li> </ul>
Timing of construction	<ul style="list-style-type: none"> <li>Timing of site clearance</li> </ul>	<ul style="list-style-type: none"> <li>Pre-construction</li> </ul>	<ul style="list-style-type: none"> <li>Design team, WSCC and appointed contractor</li> </ul>
Protected species mitigation, including any necessary licencing	<ul style="list-style-type: none"> <li>Installation of any necessary compensatory habitat (on-site or off-site) prior to works starting</li> <li>Use of specific methods of clearance (e.g. phased strimming, destructive search and ecological supervision)</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary and pre-construction design</li> </ul>	<ul style="list-style-type: none"> <li>Design team, WSCC and appointed contractor</li> </ul>
Arboriculture construction exclusion zones	<ul style="list-style-type: none"> <li>These construction exclusion zones would be protected in accordance with</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary and pre-</li> </ul>	<ul style="list-style-type: none"> <li>Appointed contractor</li> </ul>

Measure	Description	Timing/Process	Responsibility
	recommendations provided within British Standard BS 5837:2012 <i>Trees in relation to design, demolition and construction – Recommendations</i>	construction design	
<b>Operation Phase</b>			
Sustainable Drainage Design	<ul style="list-style-type: none"> <li>Drainage design to avoid changes to runoff levels or contamination of surrounding habitats</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary and pre-construction design</li> </ul>	<ul style="list-style-type: none"> <li>Design team</li> </ul>
Sensitive Lighting Design	<ul style="list-style-type: none"> <li>Where lighting is necessary it should be carefully designed to avoid and minimise illumination of all habitats adjacent to the road</li> </ul>	<ul style="list-style-type: none"> <li>Pre-construction design</li> </ul>	<ul style="list-style-type: none"> <li>Design team</li> </ul>
Landscape Design	<ul style="list-style-type: none"> <li>Landscape design should seek to minimise habitat fragmentation (e.g. hop over planting at severed hedgerows)</li> <li>Artificial habitat features including nest boxes and hibernacula</li> <li>Biodiversity net gain targets to be met within the scheme via compensatory habitat creation (for lost habitat), to include buffer habitats to separate from the road, for which may be included within the Green Corridor</li> <li>Compensatory habitat creation for protected species</li> <li>Retained habitat enhancement and management (e.g. orchard management)</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary and pre-construction design</li> </ul>	<ul style="list-style-type: none"> <li>Design team in consultation with Landscape and Ecology teams</li> </ul>
Tree planting	<ul style="list-style-type: none"> <li>Post-development tree planting be specified by a landscape specialist. In addition, where possible, trees would be retained to form the</li> </ul>	<ul style="list-style-type: none"> <li>Pre-construction design and Operation</li> </ul>	<ul style="list-style-type: none"> <li>Design team and appointed contractor</li> </ul>

Measure	Description	Timing/Process	Responsibility
	Green Corridor along the Scheme alignment.		

## 5.5. DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

- 5.5.1. With the implementation of avoidance and mitigation measures detailed in **Table 5-4**, it is expected that adverse effects upon ecological features can be suitably reduced so as to be not significant, and that a net gain in biodiversity through offsite compensation can be achieved. However, in the absence of species-specific surveys identified in the PEA and a Habitats Regulations Assessment Screening this cannot be stated with sufficient certainty to justify the conclusion of no likely significant effects at this stage. The requirements for these are noted in Section 6.6 below.
- 5.5.2. With respect to arboriculture, mitigation planting would provide beneficial effects but, as trees take many years to establish and grow, these are unlikely to compensate for the loss of high and moderate quality features which may be present within the area identified as traditional orchard or elsewhere.

## 5.6. PROPOSED ASSESSMENT METHODOLOGY

- 5.6.1. Surveys for wintering birds, breeding birds, bats, badger, hazel dormouse, reptiles, great crested newt and invertebrates would be undertaken to inform the ES.
- 5.6.2. Due to the potential for effects upon Pagham Harbour SPA, a Habitats Regulations Assessment Screening exercise would be undertaken, based on the results of the wintering bird surveys.
- 5.6.3. The assessment will be undertaken in accordance with the CIEEM's guidelines on Ecological Impact Assessment<sup>21</sup>.
- 5.6.4. The arboricultural survey and subsequent impact assessment would be undertaken in accordance with British Standard BS5837: 2012 Trees in *Relation to Design, Demolition and Construction – Recommendations*.

## 5.7. ASSUMPTIONS AND LIMITATIONS

- 5.7.1. Every effort will be made to access all required areas of land to facilitate the proposed species-specific surveys. However, in instances where, due to lack of access, a professional judgement may have to be made, based on available information.

## 5.8. ASPECTS SCOPED OUT OF FURTHER ASSESSMENT

- 5.8.1. As stated in Section 6.5 above, a conclusion of no likely significant effects cannot be justified at this stage. However, depending on the findings of the surveys and assessments proposed above, it is possible that the topic of Ecology and Nature Conservation can be scoped out of further assessment. Until this can be confirmed, **Table 6-5** outlines the aspects that are proposed to be scoped out of further assessment.
- 5.8.2. In the absence of the arboricultural survey having been undertaken, the value of trees present at the Site has yet to be determined; therefore, impacts upon moderate or high value trees cannot be ruled

<sup>21</sup> CIEEM (2018) Guidelines on Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition.

out. There would however be no impacts upon conservation areas, ancient woodland or wood pasture as such designations are absent from the Site and its surroundings.

**Table 5-5 – Aspects scoped out of further assessment**

<b>Aspect scoped out</b>	<b>Phase</b>	<b>Justification</b>
Other sites, habitats and protected species not listed in <b>Table 5-1</b> or <b>Table 5-2</b>	Construction and operation	All other sites, habitats and species are considered likely to be absent or sufficiently distant from the Site.



## 6. NOISE AND VIBRATION

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### 6.1. PROPOSED STUDY AREA

6.1.1. The study area will be developed in accordance with DMRB Volume 11 Section 3 Part 7 HD 213/11 Revision 1. The following steps will be defined to determine the study area once traffic data is available:

- The start and end points of the scheme;
- The existing routes that are being bypassed between the start and end points;
- A 1km boundary from the carriageway edge of the area above;
- A 600m boundary from the carriageway edge around the scheme and also 600m from any other affected route within 1km from the edge of the carriageway of the scheme. An affected route is where there is a possibility of a change of 1 dB(A) in the short term and 3 dB(A) in the long term; and
- Affected routes beyond the 1km boundary. Professional judgement will be used to define the extent of a 50m corridor.

### 6.2. BASELINE CONDITIONS

6.2.1. Baseline conditions are expected to be dominated by road traffic noise arising from the A29 and secondarily railway noise in Barnham.

6.2.2. There are several residential properties that are located immediately adjacent to the area where the scheme will meet the B2233 Barnham Road, notably Murrell Gardens, Ewens Gardens and Downview Road. There are also residential properties on the A29 Fontwell Avenue, which will be within close proximity to the eastern tie-in of the scheme. Dwellings south of Eastergate Lane are within 300m from the scheme alignment.

6.2.3. The closest Noise Important Area (IA), railway RI 550, is located around Barnham Station just within 1km west of the scheme. Further afield, there are Noise IAs on the A27 over 1km north of the scheme. These include IA 12491. In addition, IA 12493, located to the south east on the A29, is also at a distance over 1km from the scheme.

### 6.3. POTENTIAL IMPACTS

#### Construction

6.3.1. Noise and vibration levels generated by activities during the construction works on sensitive receptors. Noise and vibration from construction activities can cause disturbance to people living and working in the vicinity of the site. Construction noise and vibration can interfere with activities and processes in buildings; in extreme circumstances it can be a hazard to health and very high vibration can cause damage to buildings.

#### Operation

6.3.2. Noise and airborne vibration levels generated by road traffic from the operation of the scheme on sensitive receptors. Once the A29 Realignment is completed and open to vehicles, traffic noise and vibration can cause disturbance to people living and working in the vicinity of the scheme and the surrounding area.

#### Proposed Mitigation

6.3.3. National Policy emphasises the need to avoid noise giving rise to effects on health and quality of life as a result of the construction and operation of developments. It stresses the need to reduce noise at source and where this is not possible, highlights the need for measures to reduce noise levels between the source of the noise and the receptor where necessary to reduce significant effects.

## Construction

- 6.3.4. Mitigation would be provided through the CEMP. The appointed contractor would have the opportunity to seek consent from the Local Authorities through Section 61 of the Control of Pollution Act 1974 for the proposed construction activities. Details of the mitigation measures can be stipulated as part of this consent.
- 6.3.5. During the construction phase, the appointed contractor would apply Best Practicable Means, as defined in BS5228, to reduce residual noise.

## Operation

- 6.3.6. Should significant effects be identified as part of the assessment, then a mitigation strategy will be developed. This is likely to include:
- Low noise surfacing in order to reduce tire-surface interaction: An assessment of the effect of noise with and without this surface treatment should be undertaken in order to ascertain the potential cost-benefit of this measure. The noise level reduction at source for this measure will range between 1 to 3.5 dB, depending on the traffic speed; and
  - Noise mitigation features: The benefits of installing noise mitigation features (earth bunding or acoustic fencing) at specific locations may be a suitable control measure in certain areas. This mitigation strategy is likely to provide a noise level reduction between 5 to 10 dB, provided that the line-of-sight is obstructed.
- 6.3.7. The mitigation strategy would be developed in accordance with the EIA Regulations 2017 and Government Policy. A multi-disciplinary exercise would be undertaken to ensure that engineering practicability and constraints related to other topics are included in the development of a mitigation strategy.

## 6.4. DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

### Construction

- 6.4.1. It is likely that significant effects will arise post-mitigation during the construction phase of the scheme. It should be noted that this is likely to be during short periods of time.

### Operation

- 6.4.2. The aim of the mitigation will be to minimise any significant effect arising from the operation of the bypass. However, implementation of the mitigation strategy will depend on other non-acoustic variables such as visual impact and highways design.

## 6.5. PROPOSED ASSESSMENT METHODOLOGY

- 6.5.1. The assessment will relate to human response to noise and vibration; effects on ecological sensitive receptors will be considered within **Chapter 5: Ecology and Nature Conservation**.
- 6.5.2. In addition to the guidance documents noted below, relevant national policy would be followed. National policy emphasises the need to avoid noise giving rise to effects on health and quality of life as a result of the construction and operation of developments. It stresses the need to reduce noise at source and where this is not possible, highlights the need for measures to reduce noise levels between the source of the noise and the receptor where necessary to reduce significant effects.

### Establishing the Baseline

- 6.5.3. A baseline noise monitoring would be undertaken in accordance with the Calculation of Road Traffic Noise and BS7445. The survey would include a combination of short-term and long-term continuous measurements at locations representative of the existing noise sources and the noise-sensitive receptors.

6.5.4. Consultation would be undertaken with the relevant Environmental Health Officers to agree the duration and location of the measurements.

### Construction Noise and Vibration

6.5.5. The likely noise and vibration effects arising from the construction phase would be assessed in accordance with BS 5228 -1&2 (2009+A1 2014). Vibration effects arising from the construction activities would be assessed in accordance with BS5228 and BS 7385-2:1993. Further guidance would be taken from applicable local and national guidance documents.

### Operational Noise and Vibration

6.5.6. The operational assessment would be based on the Noise Policy Statement for England (NPSE) and the detailed methodology within DMRB Volume 11 Section 3 Part 7 (HD 213/11). The assessment will focus on satisfying the three aims proposed in the NPSE.

6.5.7. The construction and operational noise assessment will also have consideration for the different noise exposure levels as detailed in **Table 6-1**.

**Table 6-1 – Noise exposure levels, their potential effect and action required.**

Increasing effect level	Effect	Action
Lowest Observed Effect Level (LOAEL)	This is the level above which adverse effects on health and quality of life can be detected.	Mitigate to reduce to a minimum
Significant Observed Effect Level (SOAEL)	This is the level above which significant adverse effects on health and quality of life occur.	Avoid
Unacceptable Adverse Effect Level (UAEL)	This is the level above which unacceptable adverse effect on health and quality of life occur.	Prevent

### Human Health

6.5.8. As set out in DMRB Volume 11 Section 3 Part 7 (HD 213/11), a link has been identified between noise effects and effects on both mental and physiological health. Further research is required to define exposure parameters for a quantitative analysis such as symptoms. Therefore, this assessment will consider noise levels with respect to the NPSE and in particular its first aim, which is to “avoid significant adverse effect on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development”. The measurement of SOAEL take into account of the health effects of noise. Where noise exceeds the SOAEL, due consideration will be given to measure that might be adopted to limit the number of locations so affected and minimise the road traffic noise levels at these locations. The assessment will also consider the noise index for night time noise, which is recognised by the World Health Organisation (WHO) as an indicator of effect from night time noise on health.

6.5.9. The effects on human health will not be assessed beyond what is assessed within this chapter.

### Assumptions and Limitations

6.5.10. No assumptions and/or limitations have been identified at present.

## 6.6. ASPECTS SCOPED OUT OF FURTHER ASSESSMENT

**Table 6-2 – Aspects scoped out of further assessment**

Aspect scoped out	Phase	Justification
Effects on noise and vibration upon biodiversity receptors.	Construction	All habitats and species are considered likely to be sufficiently distant from the scheme to not be affected by noise or vibration.

## 7. AIR QUALITY

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### 7.1. PROPOSED STUDY AREA

7.1.1. In accordance with DMRB Volume 11 Section 3 Part 1 (HA207/07), separate study areas are defined for the construction and operation phases of the scheme.

#### Construction

7.1.2. The study area for construction dust would be defined in accordance with DMRB Volume 11 Section 3 Part 1 (HA207/07) (para 3.45) and would comprise an area within 200m of the red line boundary for the scheme.

#### Operation

7.1.3. The study area for the assessment of operational effects on local air quality would be set with regard to the DMRB Volume 11 Section 3 Part 1 (HA207/07) scoping criteria for determining affected links (i.e. roads), namely, a 200m corridor either side of those links on which:

- Road alignment will change by 5m or more;
- Daily traffic flows will change by 1,000 Annual Average Daily Traffic (AADT) flow or more;
- Heavy Duty Vehicle flows will change by 200 AADT or more;
- Daily average speed will change by 10 km/h or more; and
- Peak hour speed will change by 20 km/h or more.

7.1.4. As defined by DMRB Volume 11 Section 3 Part 1 (HA207/07), the study area would encompass a 200m corridor either side of all road included in the affected road network (ARN). Beyond this distance, the effects of the scheme will be imperceptible.

### 7.2. BASELINE CONDITIONS

7.2.1. The main source of air pollution within the study area is road traffic, particularly from the A27 and existing A29.

7.2.2. There are no Air Quality Management Areas (AQMAs) within the study area. This suggests that air quality within the study area is generally good with ambient pollutant concentrations likely to be below objective levels and limit values.

7.2.3. Sensitive human receptors during the construction phase include residential premises within 200m of worksites on Downview Road, Murrell Gardens, Chantry Mead, Ewens Gardens, the B2233 Barnham Road, the A29 Fontwell Avenue and Eastergate Lane.

7.2.4. Sensitive human receptors within 200m of ARN include residential premises on Barnham Road (west of Downview Road), Fontwell Avenue (between Barnham Road and Eastergate Lane), Church Lane, Critchmere Road, High View Road, St Georges Walk, Cherry Tree Drive, Collins Close, Drivers Way, Downview Road, Murrell Gardens, Upton Brook, Sackville Gardens, Barnham Road and Eastergate Lane.

### 7.3. POTENTIAL IMPACTS

7.3.1. During construction, emissions to air can occur as a result of the construction works themselves (dust and particulate matter) and from exhaust emissions from construction traffic and/or plant.

7.3.2. Sensitive human receptors within 200m of ARN affected by:

- Reduced traffic and potential improvement in air quality, including Barnham Road (west of Downview Road), Fontwell Avenue (between Barnham Road and Eastergate Lane), Church Lane, Critchmere Road, High View Road, St Georges Walk, Cherry Tree Drive and Collins Close.

- Increased in traffic and potential deterioration in air quality, including Drovers Way, Downview Road, Murrell Gardens, Upton Brook, Sackville Gardens, Barnham Road and Eastergate Lane

## 7.4. PROPOSED MITIGATION

7.4.1. Mitigation measures to reduce potential effects during construction works would be required. These are likely to be focussed on best practice measures that would be managed via a CEMP. Such measure would include, but not be limited to:

- Avoid double handling of materials;
- Minimise drop heights;
- Store dusty materials in locations shielded from the wind and as far away from sensitive receptors as practicable;
- Use cutting, grinding and drilling equipment with wet suppression or dust extraction and filtration systems;
- Damp down dry dusty surfaces with water bowsers or sprays;
- Ensure all site vehicles and machinery is well maintained and in good working order;
- Turn off engines when not in use;
- Enforce site speed limits of no more than 10mph over unpaved surfaces and 15mph over paved surfaces;
- Ensure all loads of potentially loose and dusty materials are sheeted or suitably contained before transport;
- Provide and use vehicle cleaning equipment to prevent the trackout of mud from the site;
- Regularly inspect and cleanse paved surfaces particularly around the site access (including the public highway and footway) to remove dirt and debris. Use methods to minimise dust emissions such as vacuum sweeping or wet sweeping; and
- Undertake daily visual site inspections to check for off-site dust deposition and ensure that appropriate measures to prevent/minimise emissions are in place and effective.

7.4.2. At this stage, it is not possible to specify whether any mitigation in relation to operational air quality effects will be required. However, given the likely effects of the scheme on traffic and the location of properties, it is likely that the effects of the scheme will be beneficial overall and mitigation will not be required.

## 7.5. DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

7.5.1. **Table 7-1** outlines the likely significant effects which will be assessed within the ES.

**Table 7-1 – Likely significant effects associated with Air Quality**

Effect	Receptor	Phase
Non-negligible effects on ambient concentrations of NO <sub>2</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> that could affect public health	Human receptors	Operation

## 7.6. PROPOSED ASSESSMENT METHODOLOGY

7.6.1. The air quality assessment will be undertaken in accordance with the following principal documents:

- Defra’s Local Air Quality Management Technical Guidance TG(16)<sup>22</sup>;
- Institute for Air Quality Management (IAQM) and Environmental Protection UK joint guidance on Planning for Air Quality<sup>23</sup>, 2017;
- IAQM Guidance on the Assessment of Dust from Demolition and Construction<sup>24</sup>; and
- DMRB Volume 11 Section 3 Part 1 (HA207/07)<sup>25</sup>.

### Establishing the Baseline

7.6.2. Relevant National air quality objectives and EU limit values for ambient air quality are given in **Table 13-2**.

**Table 7-2 – Air Quality Objectives and EU Limit Values (Assessment Levels)**

Pollutant	Concentration (µg/m <sup>3</sup> )	Measured as (averaging period):	Number of exceedance allowed in a calendar year
Nitrogen Dioxide (NO <sub>2</sub> )	40	Annual mean	None
	200	1-hour mean	No more than 18
PM <sub>10</sub> (particulate matter less than 10 micrometres in diameter)	40	Annual mean	None
	50	24-hour mean	No more than 35
PM <sub>2.5</sub> (particulate matter less than 2.5 micrometres in diameter)	25	Annual mean	None

7.6.3. There are no ADC monitoring sites in the study area, the nearest being ‘BARN07’ at over 1km to the southeast of the scheme along Barnham Road. This site is for monitoring roadside annual mean NO<sub>2</sub> concentrations and the highest concentration in recent years was 20.7µg/m<sup>3</sup> for 2017.

7.6.4. Data from Defra’s Pollution Climate Mapping model, which is used in reporting compliance with EU limit values, indicates that roadside concentrations of all pollutants are likely to be well below limit values along the A29 Fontwell Avenue.

### Human Health

<sup>22</sup> DEFRA (2018) Local Air Quality Management Technical Note (TG16) [online]. Available at: <https://iaqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf>

<sup>23</sup> IAQM and Environment Protect UK (2017) Land-Use Planning & Development Control: Planning for Air Quality [online]. Available at: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

<sup>24</sup> IAQM (2014) Guidance on the assessment of dust from demolition and construction [online]. Available at: [http://iaqm.co.uk/wp-content/uploads/guidance/iaqm\\_guidance\\_report\\_draft1.4.pdf](http://iaqm.co.uk/wp-content/uploads/guidance/iaqm_guidance_report_draft1.4.pdf)

<sup>25</sup> DMRB (2007) Volume 11, Section 3, Part 1: HA 207/07 Air Quality [online]. Available at: <http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf>

- 7.6.5. The assessment of likely significant effects on human health in relation to air quality is inherent in the health based objectives on which the assessment is based. These objectives have been established to protect individuals in a population, such that they define the standard below which health effects are unlikely to be experienced even by the most sensitive members of the population. Above these, worse health outcomes may be predicted.
- 7.6.6. The effects on human health will not be assessed beyond what is assessed within this chapter.

### Assessment Methodology

- 7.6.7. The air quality assessment will be undertaken following DMRB Volume 11 Section 3 Part 1 (HA207/07) methodology for operational stages.
- 7.6.8. The assessment of operational stage effects will be quantitative and will consider the potential effects on ambient air quality at selected representative human receptors within 200m of the ARN in the opening year of the scheme. In the absence of a published update to the DMRB air quality screening tool (version 1.03c)<sup>26</sup>, ADMS-Roads dispersion modelling software will be used to estimate road source contributed annual mean concentrations of NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at receptors. Defra Local Air Quality Management Technical Guidance LAQM.TG(16) will be followed to determine total annual mean concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at receptors and in verifying modelled concentrations against Arun District Council monitoring in the wider area. Modelled scenarios will include: 2017 base year, opening year without scheme, and opening year with scheme.

### Assumptions and Limitations

- 7.6.9. Traffic data used to determine the ARN are based on fixed demand modelling. Accounting for variable demand may increase the do-something traffic flows.

## 7.7. ASPECTS SCOPED OUT OF FURTHER ASSESSMENT

**Table 7-3 – Aspects scoped out of further assessment**

Aspect scoped out	Phase	Justification
Emissions from construction plant and traffic	Construction	Any air quality effects associated with construction plant and traffic during construction would be temporary, short term and are likely to be imperceptible.
Air quality effects at designated sites	Construction	There are no ecological designated sites within 200m of the ARN and therefore air quality effects at locations with statutory designation for ecological features of national or international importance ('designated sites')
Increased dust deposition and soiling rates (Statutory nuisance)	Construction	Increased dust deposition and soiling rates during construction would be temporary, short term and are likely to be imperceptible.

<sup>26</sup> <http://www.standardsforhighways.co.uk/ha/standards/guidance/air-quality.htm> (accessed 28/11/18)



## 8. CUMULATIVE ASSESSMENT

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### 8.1. INTRODUCTION

- 8.1.1. This chapter considers the effect interactions, and cumulative effects of the scheme (Phase 1: Northern phase) and all other committed developments listed in **Table 8-1**, **Table 8-2** and **Table 8-3**.
- 8.1.2. Effect interactions and cumulative effects results from multiple actions on receptors over time and can be additive or interactive (synergistic) in nature. They can also be considered as effects resulting from incremental changes caused by other past, present or reasonably foreseeable actions together with the scheme, identified as:
- Effect interactions from a single project (the interrelationship between different environmental factors); and
  - Cumulative effects from the scheme and other identified schemes.
- 8.1.3. The approach to identify the likely effect interactions and cumulative effects arising from the scheme and its interaction with other schemes will be based upon guidance contained within DMRB Volume 11 Section 2 Part 5 (HA 205/08).

### 8.2. PROPOSED STUDY AREA

- 8.2.1. DMRB guidance on the assessment of cumulative effects requires that the spatial boundary of the receptor/resource, with potential either to be affected directly or indirectly, is considered. The study area would be set for each individual topic in line with DMRB guidance. In setting the study area, consideration would be given to schemes that:
- Will be occurring at times prior to or during construction of the scheme;
  - Are reasonably foreseeable;
  - Are 'in proximity' to the scheme; or
  - Are considered likely to result in environmental effects which could act in synergy with effects arising from the scheme.

### 8.3. PROPOSED ASSESSMENT METHODOLOGY

- 8.3.1. The effect interactions and cumulative assessment would follow DMRB Volume 11 Section 2 Part 5 (HA 205/08) guidance and consider the nature of the affected receptor and of the effects concerned.
- 8.3.2. In accordance with DMRB Volume 11 Section 2 Part 5 (HA 205/08), the assessment would cover the most likely significant effect interactions and cumulative effects, rather than reporting every potential interaction. The criteria outlined in Table 2.6 of DMRB Volume 11 Section 2 Part 5 (HA 205/08) would be used alongside professional judgement to determine the significance of effect interactions and cumulative effects.
- 8.3.3. However, this guidance will be adapted based upon expert professional judgement in order to make it relevant to each environmental topic in the ES.

#### **Cumulative Effects Methodology**

- 8.3.4. DMRB guidance suggests cumulative effects should be considered for all 'reasonably foreseeable' projects and to encompass all schemes which are 'committed', including (but not necessarily limited to):
- Trunk Road projects which have been confirmed (i.e. gone through the statutory processes) in proximity to the scheme; and
  - Development projects with valid planning permissions for which statutory EIA is a requirement or a non-statutory EIA has been undertaken.

- 8.3.5. Committed Arun District Local Plan development sites which may not yet have planning permission would also be considered in the assessment.
- 8.3.6. **Table 8-1** and **Table 8-2** present the proposed planning applications within West Sussex County Council which are likely to be delivered at the same time and in proximity to the scheme.
- 8.3.7. The developments listed in Table 8-1 have been considered in the traffic model, which will be used as the basis for the air quality, noise and water assessment within the ES, and are correct as of November 2018.
- 8.3.8. Table 8-3 shows the relevant housing allocations within Arun District Local Plan. These lists will be updated for the ES.

**Table 8-1 – Committed Development for Consideration of Cumulative Effects (Developments [Considered in Traffic Modelling. May not all be relevant to the cumulative effects assessment.]**

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
WA/44/17/OUT	Outline application with some matters reserved for up to 175 dwellings, new vehicular access, together with associated car parking, landscaping & community facilities to include allotments, play space & community orchard. This application is a Departure from the Development Plan & may affect the character & appearance of the Walberton Village Conservation Area at Land East of Tye Lane Walberton	<i>Approved</i>	175
APP/C3810/A/13/2193942	Outline planning permission for up to 107 houses	<i>Approved</i>	107
A/131/15/RES	Application for approval of Reserved Matters following Outline Approval of Hybrid Application A/125/13 for the development of the site to provide up to 3365 sqm A1 retail use (including parking). Reserved matters consent is being sought for Appearance, Landscaping, Layout and Scale at Land south of A259 and west of Mill Lane, Rustington Parish of Angmering	<i>Approved</i>	3,365
A/23/15/OUT	Hybrid application - Full Planning Permission for a retail unit (Class A1) comprising 1,487sqm (1022sqm ground floor and 465sqm mezzanine) with associated access, car parking, servicing, landscaping & associated works. Outline Planning Permission for a public house (Class A4) comprising 581sqm at ground floor level - This is a	<i>Approved</i>	2,068

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	Departure from the Development Plan at Land south of New Road (A259) and East of Brook Lane Angmering N/A		
LU/307/15/DOC	<p>Application for the approval of matters reserved by condition imposed under LU/355/10/ relating to conditions 5, 7, 8, 10, 11, 12, 17, 18, 22, 27 &amp; 29 for details of materials/external surfaces for buildings, surfaces for roads/footpaths, earth remodelling, means of enclosure &amp; parking of vehicles, design statement, surface water drainage, foul drainage system, landscape &amp; layout particulars, protection of retained trees, Construction Method Statement, construction compound details, construction programme for roads, footpaths, cycleways &amp; parking areas, details of how building will achieve a 'very good' rating &amp; a schedule of materials &amp; finishes at</p> <p>Courtwick Lane Land South of Railway Littlehamton BN17 7HF</p>	Approved	2,000
LU/47/11/	<p>Outline application with some matters reserved for mixed use development comprising: demolition of existing buildings and structures, up to 1,260 residential dwellings (out of a potential 1,460 dwelling masterplan), up to 13,000 sqm of B1 employment floorspace (including 3,000 sqm Enterprise Centre), up to 3,500 sqm of Class A local facilities, a 100 bed hotel, 60 bed care home, a new 2 Form Entry primary school, community centre, youth and leisure facilities, combined heat &amp; power plant, extension to existing household recycling centre, landscaping, replacement and additional allotments, multi-functional green infrastructure including sports pitches (&amp; associated changing facilities), informal open space, children's play areas, primary vehicular access from a new access from the A259 bridging over the railway line with additional access from Mill Lane &amp; Toddington Lane. This application is the subject of an EIA &amp; a departure from the development plan. This application affects a PRoW at Land north of Toddington Lane Littlehampton BN17 7PP</p>	Approved	1,260 dwellings & 1,6000m2
WA/22/15/OUT	<p>Outline application with some matters reserved to provide up to 400 No. new dwellings, up to 500 sqm of non-residential floorspace (A1, A2, A3, D1 and/or D2), 5000 sqm of light industrial floorspace (B1 (b)/(c)) &amp; associated</p>	Approved	400 dwellings & 5,500m2

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	works including access, internal road network, highway works, landscaping, selected tree removal, informal & formal open space & play areas, pedestrian & cyclist infrastructure utilities, drainage infrastructure, car & cycle parking & waste storage. This application is a departure from the Development Plan & also lies within the parish of Eastergate at Land to the East of Fontwell Avenue Fontwell		
CM/1/17/OUT	Outline application for the erection of up to 300 dwellings & ancillary development comprising open space, a building within use class D1 (Non- Residential Institutions) of up to 875 square metres net, a building for A1 (Shops) use having a floor area of up to 530 sq. metres net, together with open space & ancillary works, including car parking & drainage arrangements, with appearance, landscaping, layout & scale wholly reserved for subsequent approval. The access detail, showing the points of access to the development, & indicated on Bellamy Roberts drawings numbered 4724/004 & 4724/005 are access proposals to be determined at this stage of the application. For the avoidance of doubt all other access detail within the site is to be determined as a reserved matter at a later stage. This application is a Departure from the Development Plan & affects the setting of Listed Buildings at Land West of Church Lane & South of Horsemere Green Lane Climping	<i>Refused – subject to Appeal</i>	300 dwellings & 1,405m <sup>2</sup>
	The proposed development comprises a warehouse and office building of 6,400 m <sup>2</sup> , covered storage of 5,337 m <sup>2</sup> and associated roadways and parking at The Vinery Poling	<i>Site being developed</i>	11,737
	84 dwellings at Littlehampton	<i>Site being developed</i>	84
F/7/15/OUT	45 dwellings at Land off Burndell Road	<i>Approved</i>	45
	46 dwellings at Land East of Roundstone Lane (excluding Manor Nursery, Pound Nursery & Pound Place)	<i>Approved</i>	46

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
Y/5/17/OUT	Outline application for 51no. dwellings with all matters reserved except for access. This application is a Departure from the Development Plan at Cinders Nursery & Land R/O Cinders Lane Yapton BN18 0JJ	<i>Approved</i>	51
Y/32/17/OUT	Application for outline planning permission for development of up to 19 dwellings with all matters reserved. This is a Departure from the Development Plan at Land at Southern end of Cinders Lane Yapton BN18 0JJ	<i>Approved</i>	19
Y/1/17/OUT	Outline Application with some matters reserved for the erection of 56 No. dwellings with associated open space and creation of new access. This application is a Departure from the Development plan & affects the character & appearance of the Yapton (Main Road) Conservation Area at Bonhams Field Main Road Yapton BN18 0DX	<i>Approved</i>	56
EG/71/14/OUT	Outline application for the erection of 60 residential dwellings with new vehicular access, open space & other ancillary works at Land at former Eastergate Fruit Farm Eastergate PO20 3RP	<i>Approved</i>	60
LU/55/15/OUT	Application for outline planning permission with some matters reserved for 68 No. dwellings (resubmission following LU/51/14/)	<i>Approved – Appealed successfully</i>	68
BN/16/12/	Outline application with some matters reserved for a development of up to 107 no. residential units (this application is a Departure from the Development Plan) at Pollards Nursery Lake Lane Barnham PO22 0AF	<i>Refused – Appealed successfully</i>	107
AL/107/16/RES	Application for Reserved Matters application following Outline Planning Permission AL/39/13 for the demolition of Oakdene and all other structures within the site and the erection of 79 dwellings, public open space, children's play areas, landscaping, drainage measures, sub-station, pumping station and all other associated works at Land West of Westergate Street & East of Hook Lane Westergate PO20 3TE	<i>Site being developed</i>	79

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	82 dwellings at Land at Courtwick (including Former Normans Nursery), Courtwick Lane	<i>Approved</i>	82
Y/19/16/O UT	Outline application for the development of a maximum of 108 No. residential dwellings, vehicular access from Burndell Road, public open space, ancillary works & associated infrastructure. This application is a Departure from the Development plan at Land off Burndell Road Yapton	<i>Approved</i>	108
P/58/15/O UT	Outline application with some matters reserved for the erection of 90 No. dwellings with associated access & open space. This is a Departure from the Development Plan at Land at Summer Lane Pagham PO21 4NG	<i>Approved</i>	90
A/169/17/O UT	Outline application with all matters reserved for demolition of existing buildings on site & erection of a mixed use development comprising up to 90 No. residential units, a care home (Use Class C2 & C3) & ancillary facilities including railway crossing, together with associated access, car parking & landscaping (resubmission following A/44/17/OUT). This application is a Departure from the Development Plan & lies within the parishes of Littlehampton & Rustington at Land west of Brook Lane & South of A259 Angmering	<i>Approved</i>	90
BN/43/16/PL	95 No. dwellings together with access, landscaping open space & associated works at Angels Nursery Yapton Road Barnham PO22 0AY	<i>Approved</i>	95
	112 dwellings at Parcel B3 & B5 Land North of Toddington	<i>Approved</i>	112
	227 dwellings at West End Nursery, Roundstone Lane, Angmering,	<i>Approved</i>	227
	268 dwellings at Land at Nyton Road, Northfields Lane and Fontwell Avenue	<i>Approved</i>	268
P/140/16/O UT	Outline application for access only - mixed use development comprising of up to 400 dwellings, a care home with up to 70 beds, a Local Centre comprising up to 2000sqm of A1/A2/A3/D1/sui generis floorspace, provision of land for a 1FE primary school (with sufficient space to ensure that it is expandable to 2FE), provision of land for a	<i>Approved</i>	396 dwellings & 2000m <sup>2</sup>

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	scout hut, safeguarding of land to help link the site to the Pagham Harbour Cycle Route & other community uses including public open space & allotments with some matters reserved at Land South of Summer Lane & West of Pagham Road Pagham		
CM/1/17/OUT	Outline application for the erection of up to 300 dwellings & ancillary development comprising open space, a building within use class D1 (Non- Residential Institutions) of up to 875 square metres net, a building for A1 (Shops) use having a floor area of up to 530 sq. metres net, together with open space & ancillary works, including car parking & drainage arrangements, with appearance, landscaping, layout & scale wholly reserved for subsequent approval. The access detail, showing the points of access to the development, & indicated on Bellamy Roberts drawings numbered 4724/004 & 4724/005 are access proposals to be determined at this stage of the application. For the avoidance of doubt all other access detail within the site is to be determined as a reserved matter at a later stage. This application is a Departure from the Development Plan & affects the setting of Listed Buildings at Land West of Church Lane & South of Horsemere Green Lane Climping	<i>Refused – successfully Appealed</i>	300
P/134/16/OUT	Outline application for the development of up to 280 dwellings (including affordable homes), land for a replacement scout hut, land for an Ambulance Community Response Post Facility and land for either a 1FE primary school or care home. Provision of a primary vehicular access from Sefter Road and demolition of No. 80 Rose Green Road and creation of a pedestrian and emergency only access. Provision of Public Open Spaces including associated children's play areas, landscaping, drainage and earthworks. This application also falls within the parish of Aldwick at Land North of Sefter Road & 80 Rose Green Road Pagham	<i>Undecided</i>	278
P/6/17/OUT	Outline application with some matters reserved for construction of up to 300No. new homes, Care home of up to 80No. beds, D1uses of up to 4000sqm including a 2 form entry Primary School, formation of new means of access onto Hook Lane & Pagham Road, new pedestrian & cycle links, the laying out of open space, new strategic landscaping, habitat creation, drainage features &	<i>Undecided</i>	397

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	associated ground works & infrastructure at Land North of Hook Lane Pagham		
A/99/17/O UT	Outline application with some matters reserved (Access only) for development up to 175 No. residential dwellings, public open space, play areas with associated infrastructure including roads, drainage & landscaping. This application affects the character & appearance of Angmering Conservation Area & the setting of Listed Buildings at Land South of Water Lane Angmering	<i>Undecided</i>	175
	Hybrid - 33116 sqm of mixed commercial and industrial uses at Oldlands Farm Phase 1	<i>Allocated site – Arun Local Plan</i>	33,116
	20,453 sq m of B2 General Industrial Floorspace together with B8 warehousing & distribution floorspace at Oldlands Farm Phase II	<i>Allocated site - Arun Local Plan</i>	20,453
	11.8 ha; 20,000 - 25,000 sq.m (B1c/B2 Industrial (Mix of sizes)) at Salt Box		25,000
	3.3 ha; 8,000 - 9,000 sq.m (B1a offices) at Rowan Park Caravan Club		9000
LU/47/11/	Outline application with some matters reserved for mixed use development comprising: demolition of existing buildings and structures, up to 1,260 residential dwellings (out of a potential 1,460 dwelling masterplan), up to 13,000 sqm of B1 employment floorspace (including 3,000 sqm Enterprise Centre), up to 3,500 sqm of Class A local facilities, a 100 bed hotel, 60 bed care home, a new 2 Form Entry primary school, community centre, youth and leisure facilities, combined heat & power plant, extension to existing household recycling centre, landscaping, replacement and additional allotments, multi-functional green infrastructure including sports pitches (& associated changing facilities), informal open space, children's play areas, primary vehicular access from a new access from the A259 bridging over the railway line with additional	<i>Approved</i>	1029



Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	access from Mill Lane & Toddington Lane. This application is the subject of an EIA & a departure from the development plan. This application affects a PRow at Land north of Toddington Lane Littlehampton BN17 7PP		
	253 dwellings at Bersted	<i>Included in Bersted Neighbourhood Plan</i>	253
	97 dwellings at Flansham	<i>Site being developed</i>	97
	86 dwellings at Barnham	<i>Included in Barnham &amp; Eastergate Neighbourhood Plan</i>	86
	34 dwellings at Yapton	<i>Allocated site - Arun Local Plan</i>	34
	137 dwellings at Angmering	<i>Allocated site - Arun Local Plan</i>	137
	195 dwellings at Angmering	<i>Allocated site - Arun Local Plan</i>	195

Planning Application Reference	Name	Status	Size of Development (Housing = dwellings, Retail/ Employment = sqm)
	396 dwellings at Pagham South	<i>Allocated site - Arun Local Plan</i>	396
	2239 dwellings at Land off New Barn Lane/at Morrells Farm/ at Chalcraft Nurseries (Bognor Regis ECO Quarter)	<i>Allocated site - Arun Local Plan</i>	2239

**Table 8-2 – Other Committed Development for Consideration of Cumulative Effects**

Planning Application Reference	Name	Status	Housing Allocation
EG/6/18/RES	Approval of reserved matters following outline consent EG/71/14/OUT for the erection of 60no. dwellings with new vehicular access, open space & ancillary works at Eastergate Fruit Farm, Barnham Road, Eastergate, PO20 3RP	<i>Approved</i>	60
WA/44/17/OUT	Outline application with some matters reserved for up to 175 dwellings, new vehicular access, together with associated car parking, landscaping & community facilities to include allotments, play space & community orchard. This application is a Departure from the Development Plan & may affect the character & appearance of the Walberton Village Conservation Area at Land East of Tye Lane Walberton	<i>Approved</i>	175
WA/23/17/OUT	Outline application with all matters reserved for residential development comprising of 22 No. dwellings involving demolition of Barnfield House & existing outbuildings. This application is a Departure from the Development Plan at Barnfield House Arundel Road Fontwell Walberton BN18 0SD	<i>Approved</i>	22

Planning Application Reference	Name	Status	Housing Allocation
BN/6/18/RES	Approval of reserved matters following outline consent BN/32/15/OUT relating to appearance, landscaping, layout & scale for erection of 38 No. dwellings including open space, landscaping & new access (resubmission following BN/28/17/RES) at Lillies Yapton Road PO22 0AY	Refused – subject to Appeal	38
APP/C3810/A/13/2193942	Outline planning permission for up to 107 houses	Approved	107

**Table 8-3 – List of Housing Allocations in the Local Plan**

Site Reference	Site Name	Cumulative Dwellings 2011-2031
Strategic Housing Sites		
SD1	Pagham South	400
SD2	Pagham North	800
SD3	West of Bersted	2,500
SD4	Littlehampton – West Bank	1,000
SD5	Barnham/Eastergate/Westergate (BEW)	2,300
SD6	Fontwell	400
SD7	Yapton	500
SD8	Ford	1,500
SD9	Angmering North	800
SD10	Climping	300
SD11	Angmering South and East	250
Relevant Neighbourhood Plan Allocations		
Policy H1 Specific Site Allocation	Eastergate Housing Site	60

### Effect Interactions Methodology

- 8.3.9. Each technical chapter will assess the categories of receptors and/or specific named receptors relevant to that topic's methodology. In some instances, the same receptor or resource may be

assessed in more than one technical chapter. In these cases, there is the possibility that several individual effects on the same receptor may add up to create a significant cumulative effect. Thus, when considering the effect interactions on a given receptor, several technical chapters will be reviewed.

8.3.10. **Table 8-4** presents the receptors identified as having the potential to experience effect interactions from the scheme during construction and operation. This represents an early assessment of potential effects only and will be refined for the ES.

**Table 8-4 – Potential Effect Interactions from the scheme**

Receptor	Potential Effect	Landscape and Visual (including arboriculture)	Ecology and Nature Conservation	Noise and Vibration	Air Quality
Local Residents	Changes to air quality, noise levels and views during demolition, construction, and operation	✓		✓	✓
Local Road Users	Effects on traffic flows and driver stress during construction and operation.	✓			
Mineral Safeguarding Area (MSA) for Sharp Sand	Consumption/sterilisation of primary and/or non-renewable resources (material assets) during construction and operation.				
Listed Buildings	Effect on setting	✓			
Watercourses	Effects on watercourses and associated aquatic ecology during construction and operation		✓		
Agricultural Land	Loss of Grade 1 and 2 agricultural land, and traditional orchards.	✓	✓		
Priority habitat	Effects on areas of priority habitat including traditional orchards, during construction, and operation	✓	✓		

## 8.4. DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

### Construction

- 8.4.1. Receptors most at risk from cumulative effects during construction are those in proximity to construction activities. Cumulative effects arising from construction phase activities are likely to relate to visual intrusion, dust, noise and vibration. The severity of cumulative effects will be dependent upon:
- The type of works being undertaken;
  - The duration of the works;
  - The distance between the works and their respective proximity to the receptor;
  - The sensitivity of the receptor; and
  - The visible presence of the works.
- 8.4.2. Temporary land-take required for ancillary works such as compounds, diversions or working space and material storage will also have the potential to cause environmental effects.
- 8.4.3. Indirect cumulative effects as a result of construction can also occur. To avoid disruptions to traffic flow caused by construction works, drivers sometimes choose to travel on surrounding roads, known as 'rat-running'. This can affect traffic flows on roads not directly affected by the construction works, which can result in reduced air quality, increased noise, reduced amenity etc. Rat-running is a common concern at a local level although by, for example, effective traffic management or night-time working, it may be possible to reduce the occurrence.
- 8.4.4. Rat-running is only likely to be an issue at the junctions between the scheme and existing roads.

### Operation

- 8.4.5. Habitats close to the scheme may be exposed to combined effects; possibly experiencing a combination of edge effects, light and noise pollution and reduced air quality as a result of the same development. If another development occurs at the same time then significance of the effects experienced by the habitat is likely to increase.
- 8.4.6. The assessment of air quality and noise and vibration effects will already consider cumulative effects of other developments, as the traffic data used within the topic-specific modelling will incorporate the developments listed in **Table 8-1** above.
- 8.4.7. Overall, many effect interactions and cumulative effects are anticipated to diminish in the longer term. As local residents or receptors become accustomed to post-construction conditions the effects may become measurably less significant, for example the recovery of ecological areas after the effects of multiple schemes or the maturation of planting to form landscape screening.

### Combined Effects of the A29 Realignment Including Northern and Southern Phases

- 8.4.8. The construction and operation of the complete realignment of the A29 including Phases 1 and 2, is likely to have the following impacts:
- Temporary closures of A29 Fontwell Avenue, A29 Lidsey Road, and Barnham Road.
  - Road becoming cul de sacs;
  - Demolition of private residences;
  - Crossing watercourses and reservoir;
  - Greater area of land take, particularly of agricultural land;
  - Severance of agricultural land;
  - Relief of congestion and improvement of road safety in the Barnham, Eastergate and Westergate area;
  - Access to and facilitation of the BEW site;

- Facilitation of economic growth of the area; and

8.4.9. The air quality and noise assessments will also consider the cumulative effect of the entire A29 bypass road within the traffic data.

#### **Assumptions and Limitations**

- 8.4.10. The prediction and evaluation of cumulative effects is not straightforward, as the interaction of effects between schemes is potentially complex and subject to change if projects are delayed or postponed. Variations in the geographical proximity of other schemes also contribute to the complexity.
- 8.4.11. The significance of individual effects on each receptor will play a role in the overall significance of the effect, which is highly likely to be at least as significant as the largest contributory environmental effect. Cumulative effects are considered according to the frequency of effects upon receptors in the identified locality, as well as the magnitude of impact on each receptor. For example, several developments occurring at the same time are likely to adversely affect local travellers to a greater degree than the disruption caused by an individual scheme. A string of developments one after another would result in a prolonged period of disruption to travellers.

# Appendix A

## **TOPICS SCOPED OUT OF FURTHER ASSESSMENT**

**Table A-1 – Justification for scoping archaeology and cultural heritage out of further assessment**

Aspect scoped out	Phase	Justification
Effects on above-ground heritage assets	Construction	Effects would be based on the effects of noise/dust/visual effects. Such effects would be temporary and short-term on the setting of designated heritage assets and not considered significant.
Buried heritage assets	Operation	Once the scheme is in operation, any buried heritage assets would not be affected.
Views from The Thatched Cottage (Grade II) and The Thimbles on Barnham Road	Operation	The scheme would not be visible in views out from the asset due to the intervening built environment and location of the road junction with Barnham Road. Views towards the asset would not be affected. The asset's relationship to the village of Eastergate would not be affected. It is unlikely there would be significant environmental effects from traffic noise.
Views from Choller Farmhouse, Barnham Lane	Operation	The scheme would not be visible in views out from the asset due to the intervening built environment and vegetation. Views towards the asset would not be affected. The asset's relationship to the Barnham and Walberton would not be affected. It is unlikely there would be significant environmental effects from traffic noise.
Views from Eastergate Memorial (Grade II)	Operation	The scheme would not be visible in views out from the asset due to the intervening built environment and the location of the road junction with Fontwell Avenue and Barnham Road. Views towards the asset would not be affected. The asset's relationship to the village of Eastergate and its visual relationship with nearby listed buildings would not be affected. It is unlikely there would be significant environmental effects from traffic noise.
Views from other assets on the A29 in Eastergate i.e. The Long house (Grade II) and Argyl Houe (Grade II)	Operation	The scheme would not be visible in views out from the assets due to the intervening built topography and location of the road junction with the A29 Fontwell Avenue. Views towards the assets would not be affected. The assets' relationships to the village of Eastgate and visual relationships with nearby listed buildings would not be affected. It is unlikely there would be significant effects from traffic noise.
Views from assets on Church Lane i.e.	Operation	The scheme would not be visible in views out from the assets. Views towards the assets would not be



Aspect scoped out	Phase	Justification
<p>Eastergate: Shelley House and the Elm Tree Stores (Grade II), The White House (Grade II), Merryend (Grade II), Old Farm Cottage (Grade II), Flint House (Grade II), Malthouse Cottages (Grade II), the Old House (Grade II), The Wilkes Head Inn (Grade II), Eastergate House (Grade II), Eastergate House (listed Grade II), Granary/outbuilding at Manor Farm (Grade II), Manor Farmhouse (Grade II), Barn and cart shed at Manor Farm (Grade II), The Parish Church of St George (Grade II*),</p>		<p>affected. The relationships of the designated heritage assets on Church Lane to each other or to the wider village of Eastergate would not be affected. It is unlikely there would be significant environmental effects from traffic noise.</p>
<p>Views from assets located in Westergate, Nyton Road and Westergate Street i.e. The stables of Westergate House to the east of the house (Grade II), Little Westergate House (Grade II), Westergate House (Grade II), Rose Cottage (Grade II), Mouse Hall (Grade II), Hop Garden Cottage (Grade II),</p>	<p>Operation</p>	<p>The scheme would not be visible in views out from the assets. Views towards the assets would not be affected. The assets' relationships to Westergate would not be affected and the relationships of the assets comprising Westergate House to each other would also not be affected. It is unlikely there would be significant environmental effects from traffic noise.</p>

**Table A-2 - Justification for scoping population and health out of further assessment**

Aspect scoped out	Phase	Justification
<p>Significant increases in workers moving into the local area</p>	<p>Construction</p>	<p>The large majority of workers are likely to reside close to the site and it is anticipated that a high proportion of construction workers will continue to reside within their current locations.</p>

Aspect scoped out	Phase	Justification
Site security/CCTV	Construction	It is considered that site security measures will be in line with the requirements set out within the Construction (Design and Management) Regulations 2015 and appropriate security will be provided on site.
Temporary blockade/partial closure of the roads including footways	Construction	Land take from Fleurie Nursery will be required to construct the roundabout on the B2233 Barnham Road, however it is currently assumed that temporary access will be provided. Specific arrangements will be confirmed during the design and construction process.
Demolition of residential properties, courtyard and associated farm buildings at Folly Foot farm	Construction	Demolition is expected to result in a proportionally small effect on the mental and physical health of the current residents due to the vacation of their property prior to construction works taking place.
Disturbance, disruption and reduction in amenity of residents	Construction	Will be considered where appropriate, within <b>Chapter 5: Landscape and Visual, Chapter 6: Noise and Vibration and Chapter 7: Air Quality.</b>
Generation of direct, indirect and induced employment opportunities	Construction	Although the scheme will generate employment opportunities which will benefit the local economy, this will not have any significant environmental effects.
Effects relating to quality of surroundings and sense of place	Construction and operation	Will be considered where appropriate, within <b>Chapter 4: Landscape and Visual.</b>
Views from the road	Construction and operation	As the scheme is an offline development, views from the roads will not change during construction. All construction works will be screened by existing trees along existing routes. Although views from the road will change during operation for users of the offline route, views will be restricted due to existing trees, orchards and residential properties and farmsteads. Therefore, significant changes from views from the road are not expected.
Loss of public and private land	Construction and operation	Due to the size of the scheme and the required land take, this will not result in a significant environmental effect.
Effects on best and most versatile agricultural land	Construction and operation	Due to the size of the scheme and the required land take, the amount of best and most versatile agricultural land lost will not be significant.

<b>Aspect scoped out</b>	<b>Phase</b>	<b>Justification</b>
Changes in driver stress and delay	Construction and operation	Although not a significant effect, the scheme will result in a reduction in driver stress and congestion due to the diversion of traffic away from the existing A29.
Changes in accessibility and amenity value of public routes and recreational resources	Construction and operation	There are several PRowS and community and recreational facilities in the area, the scheme will only directly impact one PRow which will not result in an overall significant effect.
Physical and mental health issues associated with increased air pollution, and noise and vibration levels	Construction and operation	Human health effects could arise as a result of the scheme due to increased noise levels, fugitive dust and emissions from construction vehicles. However, these effects will not be considered significant following mitigation. See <b>Chapter 7: Noise and Vibration</b> and <b>Chapter 8: Air Quality</b> for further details.
Demand for local services, accommodation and recreational open space	Operation	Due to the nature of the scheme (highways infrastructure), it is unlikely to increase demand for local services, accommodation and recreational open space.
Changes in public and private landholdings	Operation	The scheme will not involve further changes to land use, in terms of demolition or refurbishment during operation.
Changes in economic activity due to improved connectivity	Operation	Although the scheme will improve connectivity, this is not considered to be a significant effect.

**Table A-3 - Justification for scoping ground conditions and contamination out of further assessment**

<b>Aspect scoped out</b>	<b>Phase</b>	<b>Justification</b>
Effects on construction workers, off-site users in the immediate vicinity of the scheme	Construction	Any human health risks as a result of contamination i.e. from Made Ground and ACM will be mitigated and reduced through good construction practices and remediation and will be suitably reduced so as to not be significant.
Effects on controlled waters	Construction	Relevant regulations and good practice guidance will be adhered to ensure suitable containment measures and procedures for the storage and handling of materials and wastes, to make sure that spills or contaminant releases do not enter the ground or surface water courses.
Effects on underground services and structures	Construction	Any identified aggressive concrete conditions and concentrations of sulphate and petroleum hydrocarbons will be mitigated through remediation, the provision of

Aspect scoped out	Phase	Justification
		'clean' service corridors and use of appropriate concrete products.
All	Operation	The NPPF requires newly developed or redeveloped sites to be 'suitable for use' in relation to ground contamination. It is standard for a planning condition requiring a protocol for managing unexpected contamination during construction to be attached to a planning permission. Therefore, risk associated with contaminated land would appropriately addressed to meet this requirement.

**Table A-4 - Justification for scoping water resources, flood risk, groundwater and drainage out of further assessment**

Aspect scoped out	Phase	Justification
Increase in flood risk	Construction and operation	The design of the scheme would provide sufficient flood risk and drainage mitigation which will be detailed in the Flood Risk Assessment required for the scheme. Therefore, significant impacts on the flood risk, drainage and the water environment are not likely to be present.
Drainage	Construction and operation	
Effects on groundwater	Construction and operation	The application of groundwater monitoring, good construction practice and discharge locations within a sustainable drainage design would avoid significant impacts in terms of construction and operational phase groundwater quality and quantity effects

**Table A-5 - Justification for scoping materials and waste out of further assessment**

Aspect scoped out	Phase	Justification
Demolition of two residential properties at Folly Foot Farm	Construction	It is anticipated that minimal quantities of materials will be consumed, with the focus of the work comprising site clearance.
Depletion of natural and non-renewable resources	Construction	It is anticipated that minimal quantities of materials will be consumed with mitigation implemented to acquire material responsibly, optimising resources through design and minimising the import and export of materials.

Reduction in landfill capacity	Construction	It is anticipated that minimal amounts of waste will be produced by the scheme, which will not significantly reduce landfill capacity in the area.
Sterilisation of sharp sand mineral resources	Construction	Due to the size of the scheme and the required land take, the amount of sharp sand mineral resources that will be sterilised will not be significant.
Materials	Operation	Material resource consumption for a small number of specialist components and bulk products for routine works and repairs of the roads and ancillary infrastructure will be very low.
Waste	Operation	Any waste produced during the operational phase of the scheme is expected to be minimal.

**Table A-6 - Justification for scoping climate out of further assessment**

<b>Aspect scoped out</b>	<b>Phase</b>	<b>Justification</b>
Product stage (manufacture and transport of raw materials to suppliers)	Construction	Emissions from the production stage are unlikely to be significant.
Transport of materials to site	Construction	Emissions from the transport of materials to site is unlikely to be significant, particularly after mitigation to minimise imports to site.
Plant and equipment use during construction	Construction	Emissions from plant and equipment are unlikely to be significant sources of emissions.
Transport of waste	Construction	Emissions from the transport of materials to site is unlikely to be significant, particularly after mitigation to minimise exports from the site.
Disposal of waste	Construction	Emissions from the disposal of waste are unlikely to be significant.
Land use, land use change and forestry	Construction and Operation	Emissions from the disposal of biomass are not expected to be significant.
End-user emissions (regional traffic flows) - traffic	Operation	The scheme is not expected to result in a significant increase in traffic flow, therefore end-user emissions are likely to remain the same.



Maintenance, repair, replacement, refurbishment	Operation	Maintenance, repair, replacement and refurbishment associated with the scheme are not considered to be large emissions sources.
Effects associated with sea level rise and storm surge	Operation	The scheme is located inland.