



West Sussex County Council

A29 REALIGNMENT PHASE 1

Environmental Statement





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APPENDICES

See Volume 3 of the Environmental Statement.

GLOSSARY OF DEFINED TERMS AND ACRONYMS

DEFINED TERMS

Term	Definition
The Site	The land shown by the red line on Figure 1-3 – Planning Application Site Boundary , being land within which the authorised development may be carried out.
The Applicant	West Sussex County Council (in its capacity as Highway Authority and promoter of the Scheme).
The EIA Regulations	The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
WSCC	West Sussex County Council (other than in its Highway Authority and promoter of the Scheme role).

ACRONYMS

Term	Definition
AADT	Average Annual Daily Traffic
AAWT	Annual Average Weekday Traffic
ADMS	Atmospheric Dispersion Model System
AEP	Annual Exceedance Probability
AIA	Arboricultural Impact Assessment
AM	Ancient Monument
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Areas
ATC	Automatic Traffic Counts
BCR	Benefit to Cost Ratio
BGL	Below Ground Level
BGS	British Geological Survey
BNL	Basic Noise Level
BPM	Best Practical Means

Term	Definition
BS	British Standard
CDE	Construction, Demolition and Excavation
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute for Ecological and Environmental Management
CO ₂	Carbon Dioxide
CoPA	Control of Pollution Act 1974
CRTN	Calculation of Road Traffic Noise
CWS	County Wildlife Site
dB	Decibel
DCLG	Department for Communities and Local Government (as was)
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EC	European Commission
EIA	Environmental Impact Assessment
EQS	Environmental Quality Standards
ES	Environmental Statement
EU	European Union
GHG	Greenhouse Gas
GIS	Geographical Information System
GLVIA	Guidelines for Landscape and Visual Impact Assessment
HAWRAT	Highways Agency Water Risk Assessment Tool
HGV	Heavy Goods Vehicles
HRA	Habitat Regulations Assessment
HSE	Health and Safety Executive

Term	Definition
IAN	Interim Advice Note
IAQM	Institute of Air Quality Management
ISO	International Standards Organisation
JNCC	Joint Nature Conservation Committee
LAQM	Local Air Quality Management
LNR	Local Nature Reserve
LOAEL	Lowest-Observed-Adverse-Effect Level
MA&D	Major Accidents and/or Disasters
MAGIC	Multi-Agency Geographic Information for the Countryside
MHCLG	Ministry of Housing Communities and Local Government
MMP	Materials Management Plan
NIA	Noise Important Areas
NIR	Noise Insulation Regulations (1975) (as amended) (SI 1975/1763)
NMU	Non-motorised user
NNR	National Nature Reserve
NO ₂	Nitrogen Dioxide
NOEL	No Observed Effect Level
NO _x	Nitrogen Oxides
NPSE	Noise Policy Statement for England
NSR	Noise Sensitive Receptor
O ₃	Ozone
OBC	Outline Business Case
OS	Ordnance Survey
PM	Particulate Matter
PM ₁₀	Particulate Matter to 10 Microns
PM _{2.5}	Particulate Matter to 2.5 Microns
PRoW	Public Rights of Way

Term	Definition
QBAR	Mean Annual Flood
RPA	Root Protection Area
RSPB	Royal Society for the protection of Birds
SAC	Special Areas of Conservation
SNCI	Sites of Nature Conservation Importance
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SPI	Species of Principal Importance
SPZ	Source Protection Zones
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan
TPO	Tree Preservation Order
UK	United Kingdom
UKCP09	UK Climate Projections 2009
UKCP18	UK Climate Projections 2018
UN/ECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
WAC	Waste Acceptance Criteria
WSCC	West Sussex County Council

1. INTRODUCTION

1.1. BACKGROUND

- 1.1.1. West Sussex County Council (referred to as ‘the Applicant’) is seeking to obtain detailed planning permission for the realignment of the A29 (referred to as the ‘Scheme’), to the north of Eastergate and the north-west of Barnham, villages north of Bognor Regis. The location is identified in **Figure 1-1 - Scheme Location Plan** and **Figure 1-2 - Aerial View of the Site** and described further in **Chapter 2: The Existing Site**.
- 1.1.2. The proposed planning application will seek permission for:
- 1.1.3. *“The construction of a 1.3km single carriageway with a 3m wide shared cycleway / footway, , one uncontrolled pedestrian crossing to enable users of the PRow to cross the carriageway, three roundabouts, provision of hard and soft landscaping, road markings, traffic signals, bus stops, and signalised pedestrian crossings, construction of a substation building; installation of a noise barrier, and other associated works”*
- 1.1.4. The planning application boundary for the Scheme is presented in **Figure 1-3 - Planning Application Boundary**; the area which it encompasses is referred to as ‘the Site’. Further details on the Scheme are presented in **Chapter 3: Description of the Scheme**.
- 1.1.5. The Environmental Statement (ES) is the written output of the Environmental Impact Assessment (EIA) process which has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (Ref. 1.1) (referred to as the ‘the EIA Regulations’). The ES is one of the supporting documents submitted to the determining planning authority, in this case West Sussex County Council (WSSCC) (in its capacity as the Local Planning Authority), in support of the planning application.
- 1.1.6. This chapter outlines the legal framework and structure of the ES and supporting documents. A breakdown of the information required by the EIA Regulations is provided in **Table 1-1** alongside guidance on the location of this information within this ES.
- 1.1.7. WSP has been commissioned by the Applicant to carry out the EIA in support of the planning application. This has incorporated technical input from a number of consultants, as outlined in **Table 1-2**.

1.2. DEFINITION OF ENVIRONMENTAL IMPACT ASSESSMENT

- 1.2.1. The term ‘environmental impact assessment’ describes a procedure that must be followed for certain types of projects before they can be given ‘development consent’. The procedure is a means of drawing together, in a systematic way, an assessment of a project’s likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing them are properly understood by the public, statutory consultees and the relevant competent authority before it makes its decision. The aim of EIA is to:

“protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process” and “ensure that the public are given early and effective opportunities to participate in the decision making procedures.” (Ref. 1.2)

1.3. LEGAL FRAMEWORK FOR THE ENVIRONMENTAL STATEMENT

1.3.1. The EIA Regulations implement the requirements of the EU Directive 2014/52/EU (Ref. 1.3) and require that prior to consent being granted, for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development which must always be subject to an EIA (Schedule 1 development) and other developments which may require an assessment if they give rise to likely significant effects (Schedule 2 development).

SCREENING (REGULATIONS 5, 6 AND 7)

1.3.2. The Scheme falls under Part 10(f) of Schedule 2 of the EIA Regulations, as it relates to the construction of roads. At over 1ha, the Scheme exceeds the ‘indicative threshold’ for Part 10(f) development. It also has the potential for significant environmental effect.

1.3.3. A formal Screening Opinion was not sought from WSCC as the Applicant considered that the Scheme would need EIA. Furthermore, WSCC informally advised that the Scheme does require EIA on the basis that:

- The Scheme is close to residential dwellings which have the potential to experience likely significant effects as a result of increases in noise levels;
- The Scheme would require the removal of orchard habitat which has the potential to result in likely significant effects on protected species; and
- There is the potential for likely significant effects due to the cumulative effects on landscape, views and air quality, and from noise, with other nearby reasonably foreseeable developments, identified in the West Sussex Local Plan (Ref. 1.4). These developments include the allocated housing sites at Barnham, Eastergate, Westergate, and Phase 2 of the A29 Realignment.

1.3.4. WSCC also advised that Habitats Regulations Assessment (HRA) screening will be needed due to the proximity of Pagham Harbour Special Protection Area (SPA) and Chichester and Langstone Harbours Ramsar site and SPA.

SCOPING (REGULATION 15)

1.3.5. An EIA Scoping Report was submitted to WSCC on 2nd April 2019 (as presented in Appendix 5.1), together with a formal request for an EIA Scoping Opinion, in accordance with Regulation 15 of the EIA Regulations. A formal Scoping Opinion was subsequently received from WSCC on the 3rd May 2019, as included in Appendix 5.1. Further details on the Scoping Opinion and how it has informed this ES are provided in **Chapter 5: Approach to EIA**.

ENVIRONMENTAL STATEMENT

1.3.6. The findings of the EIA are presented in this ES which has been prepared in accordance with the EIA Regulations as well as planning practice guidance (Ref. 1.4). The ES is provided in three parts:

- Volume 1: Main Text and Figures;
- Volume 2: Technical Appendices; and

- Volume 3: Non-Technical Summary.

1.3.7. Schedule 4 of the EIA Regulations provides details of the information required for inclusion in an ES. **Table 1-1** summarises the requirements and where the information is located in this ES.

Table 1-1 - Location of Required Information within the ES

	Required Information	Location within this ES
1	Description of the development, including in particular:	
	(a) a description of the location of the development	<ul style="list-style-type: none"> ▪ Chapter 2: The Existing Site
	(b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases	<ul style="list-style-type: none"> ▪ Chapter 3: Description of the Scheme
	(c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used	<ul style="list-style-type: none"> ▪ Chapter 3: Description of the Scheme
	(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.	<ul style="list-style-type: none"> ▪ Chapter 5: Approach to EIA ▪ Technical Chapters 6 – 13
2	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.	<ul style="list-style-type: none"> ▪ Chapter 4: Consideration of Alternatives
3	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	<ul style="list-style-type: none"> ▪ Chapter 2: The Existing Site ▪ Chapter 5: Approach to EIA ▪ Technical Chapters 6 – 13
4	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	<ul style="list-style-type: none"> ▪ Technical Chapters 6 – 13 <p><i>Unless otherwise justified in Chapter 5: Approach to EIA.</i></p>
5	A description of the likely significant effects of the development on the environment resulting from, inter alia	

	Required Information	Location within this ES
	a. the construction and existence of the development, including, where relevant, demolition works;	<ul style="list-style-type: none"> ▪ Technical Chapters 6 – 13
	b. the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	<ul style="list-style-type: none"> ▪ Chapter 9: Ecology and Nature Conversation ▪ Chapter 11: Water Resources and Flood Risk <p><i>Unless otherwise justified in Chapter 5: Approach to EIA.</i></p>
	c. the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	<ul style="list-style-type: none"> ▪ Chapter 6: Air Quality ▪ Chapter 7: Noise and Vibration ▪ Chapter 10: Landscape & Visual <p><i>Unless otherwise justified in Chapter 5: Approach to EIA.</i></p>
	d. the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	<ul style="list-style-type: none"> ▪ Technical Chapters 6 – 13 <p><i>Unless otherwise justified in Chapter 5: Approach to EIA.</i></p>
	e. the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	<ul style="list-style-type: none"> ▪ Chapter 14: Cumulative Effects
	f. the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	<ul style="list-style-type: none"> ▪ Chapter 3: Description of the Scheme
	g. the technologies and the substances used.	<ul style="list-style-type: none"> ▪ Technical Chapters 6 – 13
6	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	<ul style="list-style-type: none"> ▪ Technical Chapters 6 – 13
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	<ul style="list-style-type: none"> ▪ Technical Chapters 6 – 13
8	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available	<p>Not applicable.</p> <p><i>Justified in Chapter 5: Approach to EIA.</i></p>

	Required Information	Location within this ES
	and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU (3) of the European Parliament and of the Council or Council Directive 2009/71/Euratom (4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	
9	A non-technical summary of the information provided under paragraphs 1 to 8	<ul style="list-style-type: none"> Non-Technical Summary (Volume 3)
10	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	<ul style="list-style-type: none"> All Chapters

1.4. THE PROJECT TEAM

1.4.1. In line with Regulation 18(5)(a) – (b) of the EIA Regulations, the ES and technical assessments which inform it have been undertaken by a suitably qualified project team. **Table 1-2** presents the Project Team for the ES, their associated roles and expertise. The Project Team stated are responsible for the scope, content and assessment of likely significant effects of their respective technical chapters (where relevant).

1.4.2. WSP is responsible for the coordination, compilation and procedural review of the ES. WSP is registered under the EIA Quality Mark operated by the Institute of Environmental Management and Assessment (IEMA) which recognises our commitment to excellence in EIA activities. WSP was one of the original eight pilot organisations in the UK that trialled the process in 2011 and developed the EIA Quality Mark scheme from the former Corporate Registered Assessor process. We have continued to maintain our EIA Quality Mark registration, following annual examination by IEMA in relation to our ongoing products, staff, innovation and promotion of EIA within the industry. WSP has and continues to support and lead nationally recognised guidance for EIA in the UK.



1.4.3. WSP has developed and applies an in-house set of processes, procedures and guidance for EIA based on sound project management principles.

Table 1-2 - The Project Team

Topic	Competent Expert Evidence
EIA Coordination, overarching technical authority for the ES: <ul style="list-style-type: none"> Chapter 1 Introduction Chapter 2 The Existing Site 	EIA Project Director: Jo North, MSc BSc EIA Project Coordination: Matthew Shepherd MSc MSc PIEMA

Topic	Competent Expert Evidence
<ul style="list-style-type: none"> ▪ Chapter 3 Description of the Scheme ▪ Chapter 4 Consideration of Alternatives ▪ Chapter 5 Approach to the EIA ▪ Non-Technical Summary 	
Chapter 6: Air Quality	Andy Talbot BSc MSc CSci MEnvSc MIAQM PIEMA
Chapter 7: Noise and Vibration	Lisa Watt MA, BA (Hons), MIOA
Chapter 8: Transport and Access	Alex Georgeson BEng MTPS
Chapter 9: Ecology and Nature Conversation	Verity Dickie BSc CIEEM
Chapter 10: Landscape and Visual	Christopher Carolan BSc MSc
Chapter 11: Water Resources and Flood Risk	Emiliya Stoykova MEng MSc MCIWEM MICRS
Chapter 12: Geology and Soils	Matthew Shepherd MSci MSc PIEMA
Chapter 13: Archaeology	Authored by: Matthew Shepherd MSci MSc PIEMA Reviewed by: Paul Riggott MSc BA MSc
Chapter 14 Cumulative Effects	Jenny Warhurst, MEnvSci (Hons), CRWM Jerome Kreule, MEnvSci, GradIEMA

1.5. PLANNING APPLICATION DOCUMENTS

1.5.1. The ES is one of a suite of documents which will support the planning application for the Scheme. The planning application submission comprises the following documents:

- Application Fee, Application Form and Covering Letter;
- The Planning Statement; and
- Appendices including:
 - Planning Policy Table (Appendix A);
 - Minerals Statement (Appendix B);
 - Aerodrome Safeguarding Statement (Appendix C);
 - A29 Consultation Report (Appendix D); and
 - Stage 1 Road Safety Audit and Designers Response (Appendix E).

1.5.2. The Environment Statement (ES) (Volume 1) and the Non-Technical Summary (Volume 3). The ES comprises the following chapters:

- Chapter 1 Introduction;
- Chapter 2 The existing site;
- Chapter 3 Description of Proposal;
- Chapter 4 Consideration of alternatives;
- Chapter 5 Approach to EIA;

- Chapter 6 Air quality;
- Chapter 7 Noise and vibration;
- Chapter 8 Transport and access;
- Chapter 9 Ecology and nature conservation;
- Chapter 10 Landscape and visual;
- Chapter 11 Water resources and flood risk;
- Chapter 12 Geology and soils;
- Chapter 13 Archaeology and heritage; and
- Chapter 14 Cumulative effects.

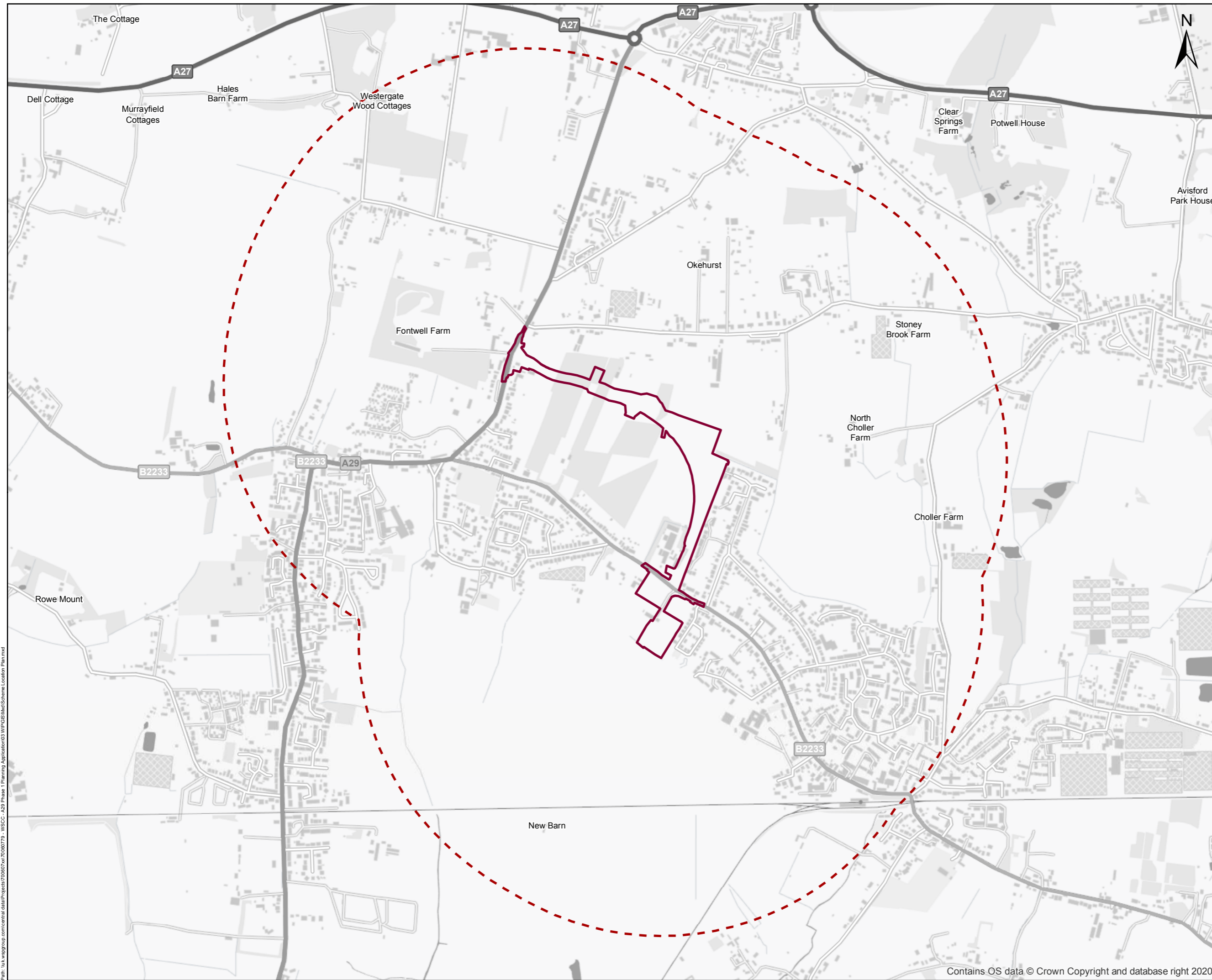
1.5.3. The following documents are appended to the Environmental Statement (Volume 2):

- Site Clearance Plan (Appendix 3.1);
- Design drawings (Appendix 3.1);
- Green Infrastructure Strategy (Appendix 3.2);
- Landscape Strategy (Appendix 3.3);
- Arboriculture Report and Tree Protection Plan (Appendix 3.4);
- Outline Construction Environmental Management Plan (Appendix 3.5);
- Scope Report (Appendix 5.1);
- Scoping Opinion including email clarifications (Appendix 5.2);
- Air Quality and Dust Assessment (Appendix 6.1);
- Noise and Vibration (Appendix 7.1);
- Transport Assessment (Appendix 8.1);
- Walking, Cycling, Horse Riding Assessment Report (Appendix 8.2);
- Preliminary Ecological Appraisal (Appendix 9.1);
- Bat Survey Report Appendix 9.2);
- Badger Survey Report – Restricted (Appendix 9.3);
- Dormouse Survey Report (Appendix 9.4);
- Breeding Bird Survey Report (Appendix 9.5);
- Wintering Bird Survey Report (Appendix 9.6);
- Reptile Survey Report (Appendix 9.7);
- Great Crested Newt Survey Report (Appendix 9.8);
- Habitats Regulations Screening (Appendix 9.9);
- Biodiversity Net Gain Report (Appendix 9.10);
- Landscape and Visual Appraisal Methodology (Appendix 10.1);
- Lighting Assessment (Appendix 10.2);
- Planting Schedule (Appendix 10.3);
- Landscape Maintenance and Management Plan (Appendix 10.4);
- Flood Risk Assessment (Appendix 11.1);
- HEWRAT Assessment (Appendix 11.2);
- Watercourses Location Map (Appendix 11.3);
- Contaminated Land Preliminary Risk Assessment Report (Appendix 12.1);
- Archaeological Desk Based Assessment (Appendix 13.1);
- Geophysical Survey (Appendix 13.2);
- Archaeological Mitigation Strategy (Appendix 13.3);
- Written Scheme of Investigation (Appendix 13.4); and

- Long list of committed developments (Appendix 14.1).

1.6. REFERENCES

- Reference 1.1: Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Statutory Instrument 2017 No. 571.
- Reference 1.2: Planning Practice Guidance (PPG) Online Tool, Paragraphs 032 and 033. Reference ID: 4-002-20140306. [Online] accessed via <https://www.gov.uk/guidance/environmental-impact-assessment>, 11th March 2020.
- Ref 1.3, European Parliament, 2014, EU Directive 2014/52/EU - Amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment
- Reference 1.4: Planning Practice Guidance (PPG) Online Tool. [Online] accessed via <https://www.gov.uk/guidance/environmental-impact-assessment>, 11th March 2020.



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- Red Line Boundary
- - - 1KM Study Area

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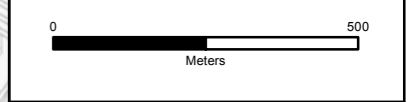
Drawing Status: **FINAL**

Job Title: **A29 Phase 1 Planning Application**

Drawing Title: **Figure 1.1 - Scheme Location Plan**

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Drawn	UKCJR003	Originalled	Date
Stage 1 check	AS	DY	08/10/2020
Stage 2 check	DY		



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 Redline Boundary

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Revision Details	By	Date	Suffix
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Drawing Status
FINAL

Job Title
**A29 Phase 1
 Planning Application**

Drawing Title
Figure 1.2 - Aerial View

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Drawn	UKCJR003		
Stage 1 check	AS	Stage 2 check	DY
		Originated	Date
		DY	08/10/2020



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2. THE EXISTING SITE

2.1. INTRODUCTION

- 2.1.1. This chapter provides an overview of both the Site (**Figure 1.3 - Planning Application Boundary**) and the surrounding area. Key spatial boundaries are illustrated on **Figure 2.1 - Environmental Constraints Plan**). **Table 2.3** provides an overview of key environmental receptors to the Scheme, alongside a brief description of those changes arising from the Scheme they are likely to experience. Further technical data is provided within the technical chapters 6 – 13.
- 2.1.2. The Site comprises an area of approximately 11.8 hectares (ha). The OS Grid Reference for the approximate centre of the Site is National Grid Reference SU 95215 05583.
- 2.1.3. The Site location is illustrated in **Figure 1.1 - Scheme Location Plan** and **Figure 1.2 - Aerial View of the Site**.

2.2. CURRENT LAND USE

- 2.2.1. The Site is located within a rural/suburban area to the north of Eastergate and the north-west of Barnham, both villages north of Bognor Regis.

BUILT STRUCTURES AND COMMUNITY FACILITIES.

- 2.2.2. 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.
- 2.2.3. The Public Right of Way (PRoW) Footpath 318 runs in a north-to-south direction and crosses the site between Eastergate Lane and the B2233 Barnham Road.

LAND USE AND DESIGNATIONS

- 2.2.4. The Site comprises arable fields, woodland, orchard and areas of managed grassland. The Site is bound by agricultural fields to the north, the B2233 (Barnham Road) to the south, the A29 to the west and the rear of residential properties on Murrell Gardens to the east. The Site is not currently used for agricultural purposes.
- 2.2.5. There are areas of vegetation along the eastern boundary of the Fordingbridge Industrial Estate (Halo) (located south and west of the Site) and along the western boundary of the residential properties on Murrell Gardens.
- 2.2.6. An arboricultural survey indicated that there are potentially four veteran trees within the Site. A small section is covered by Tree Preservation Order (TPO) TPO/BN/1/20 which protects 19 individual trees and one tree group. An arboricultural survey identified the presence of 77 arboricultural features including 46 trees, 25 tree groups and six hedges. There is no Ancient Woodland within the Site.
- 2.2.7. Habitats of Principal Importance (HPI) are identified throughout the Site (specifically, traditional orchards and woodland).

SURROUNDING AREA

- 2.2.8. The area surrounding the Site contains a mix of residential and commercial uses both within the surrounding villages and along the local road network. The wider area is predominately agricultural land.
- 2.2.9. There are 6 farms within 500m of the Site boundary, these include: Ryburn Farm, Manor Farm, Folly Foot Farm, Greenfields Farm, Northfields Farm and North Choller Farm. Folly Farm is within the western end of the Site.
- 2.2.10. Fleurie Nursery (horticultural) is located to the south of the B2233 Barnham Road, south west of the Site.
- 2.2.11. The Halo site is located to the west of the Site, adjacent to the proposed roundabout on Barnham Road.

POPULATION AND SETTLEMENTS

- 2.2.12. On the northern, western and southern areas of the Site is the Westergate Built Up Area (BUA). The Westergate BUA slightly overlaps with the Site boundary along these sides and across the proposed entrance to the east of the Site boundary.
- 2.2.13. The Site falls within the boundary of West Sussex County Council (WSSCC). As of 2018, WSSCC had a population of 858,900 (Ref. 2.1).
- 2.2.14. The Site is also within the Arun District Council (ADC) boundary. As of 2018, ADC had a population of 159,800.
- 2.2.15. There are residential areas close to the Site, including along the B2233 Barnham Road, Downview Road, Ewens Gardens, Murrell Gardens, Cherry Tree Drive, Collins Close and A29 Fontwell Avenue.
- 2.2.16. A dentist surgery is the only community facility within 200m of the Site.

TOPOGRAPHY

- 2.2.17. The topography within the Site varies between 8 and 16 metres above ordnance datum (m AOD).

UTILITIES

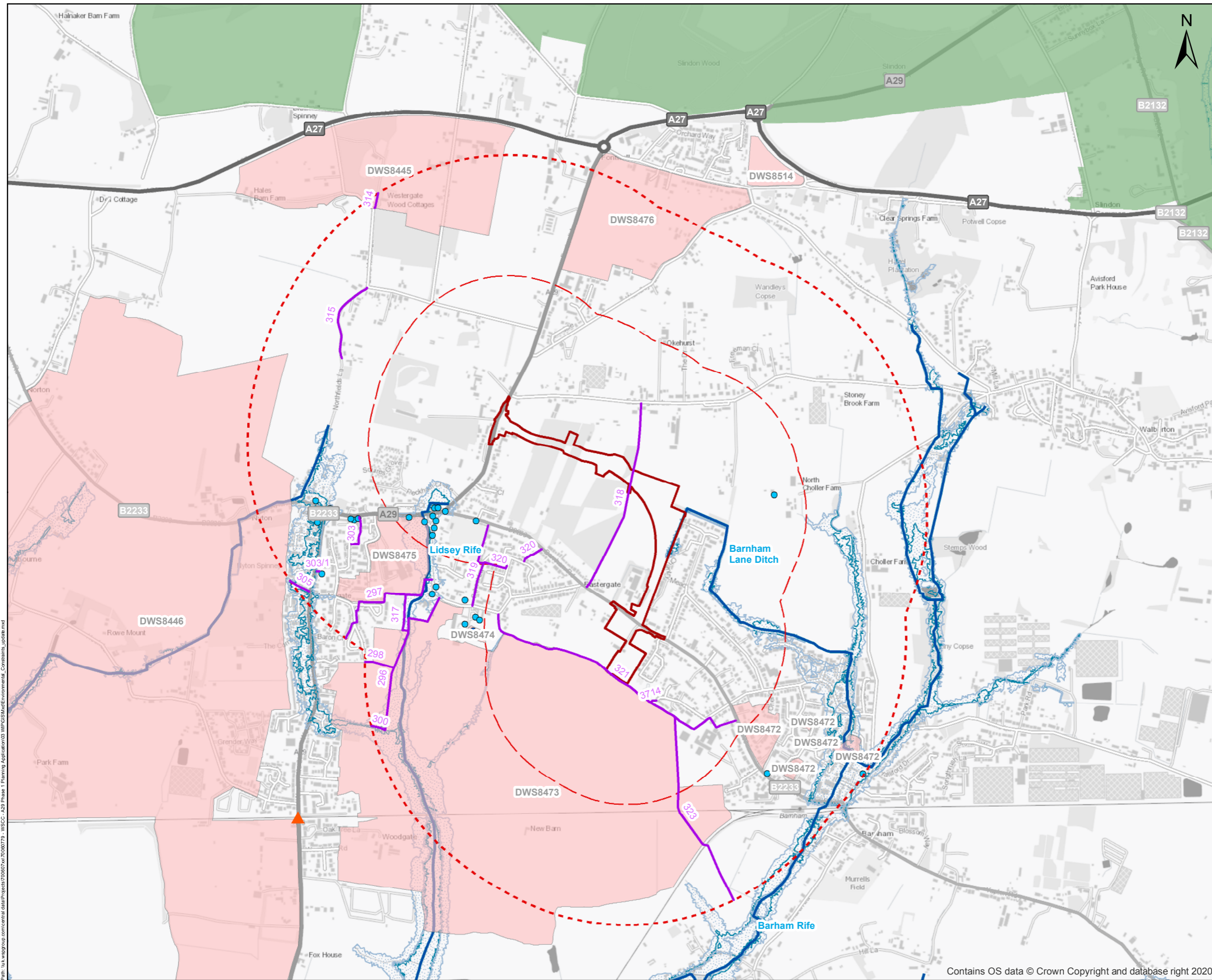
- 2.2.18. An electricity substation, which provides electricity for residential properties surrounding the Site, is located at the north western end of the Site.
- 2.2.19. There are no electricity pylons within the Site.
- 2.2.20. There are no aboveground pipes within the Site. Underground utilities including Scottish and Southern electricity service cable, Scottish and Southern electricity high voltage cable, Southern gas networks low pressure main, BT Telecoms, Portsmouth Water mains and Southern Water foul drainage are present along the existing A29 at Fontwell Avenue and along Barnham Road.

ACCESS

- 2.2.21. The Site is currently accessed via farm tracks, and through private land owned by local farms, businesses and a local residential property.
- 2.2.22. The A29 is the only A-road within the vicinity of the Site. Currently, the A29 runs in a north-south direction along the western side of the Site. Approximately 500m to the south of the Site, is a

roundabout which has exits to the B2233 (Barnham Road) and the A29, which continues south through Westergate. Approximately 1.2km to the north of the Site is another roundabout along the A29 which has four exits. Two of these join the A27 which traverses in an east-west direction. One of the exits leads to Arundel Road which goes through the residential area of Fontwell.

- 2.2.23. The B2233 Barnham Road is the only B-road within the vicinity of the Site. It runs east-to-west along the southern side of the Site. As part of the proposed realignment of the A29, the A29 is proposed to join the B2233 at the southernmost part of the Site.
- 2.2.24. To the north of the Site is Eastergate Lane which runs in an east-to-west direction.
- 2.2.25. There is a Public Right of Way (PRoW) that cuts through the Site on the eastern side of the Site. The PRoW is a pedestrian/cycleway that connects Eastergate Lane to the B2233 Barnham Road.



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- Study Area 1km
- Study Area 500m
- Red Line Boundary

Listed Buildings:

- Grade I
- Grade II*
- Grade II
- Woodgate Level Crossing
- Archaeological Notification Areas
- Public Right of Way
- Statutory Main Rivers (Eng) (<250k)
- Flood Zone 2
- Flood Zone 3
- South Downs National Park

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Revision Details			
By	Date	Check	Suffix

Drawing Status: **FINAL**

Job Title: **A29 Phase 1 Planning Application**

Drawing Title: **Figure 2.1 - Environmental Constraints**

Scale at A3

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Stage 1 check	AS	Stage 2 check	DY
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2.3. ENVIRONMENTAL CHARACTERISTICS

2.3.1. Key environmental features are set out in Figure 2.1 - Environmental Constraints Plan and summarised below, with further detail available in chapters 6-13.

DESIGNATIONS

LANDSCAPE DESIGNATIONS (SEE CHAPTER 10 – LANDSCAPE AND VISUAL)

- 2.3.2. 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.
- 2.3.3. There are no Areas of Outstanding Natural Beauty (AONB) within the Site or study area.
- 2.3.4. The study area falls within the National Character Area (NCA) 126: South Coast Plain, in its entirety. The South Coast Plain Landscape Character Area (LCA) is a predominantly flat, coastal landscape.
- 2.3.5. Locally, the Site primarily falls within LCA SC9: Chichester to Yapton Coastal Plain, and partially falls within SC8: Fontwell Upper Coastal Path (Ref. 2.2).
- 2.3.6. At County level, the following LCAs have been identified:
- Character Area SC7 Halnaker Upper Coastal Plain;
 - Character Area SC8 Fontwell Upper Coastal Plain; and
 - Character Area SC9 Chichester to Yapton Coastal Plain.
- 2.3.7. At a local level, two separate studies describe the character of the landscape. The two studies are the 2006 Arun Landscape Study (Ref. 2.3) and the 2011 South Downs Integrated Landscape Character Assessment (Ref. 2.4).
- 2.3.8. The 2006 Arun Landscape Study encompasses LCA's, identified at a local level, along with an indication of the character areas' capacity to accommodate future development. 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 effect 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 value attached to the landscape, or to specific elements within it. **Table 2-1** lists the LCAs and their sensitivity:

Table 2-1 - Landscape Character Areas

LCA Number	LCA Name	LCA Sensitivity
11	Lidsey Coastal Plain	Low/ Medium
12	Park Farm Upper Coastal Plain	Low
13	Westergate Western Fringe	Medium/ High
14	Westergate Eastern Fringe	Low/ Medium
15	Norton Upper Coastal Plain	Low
16	Fontwell Eastergate Mosaic	Medium
17	Westergate – Barnham Coastal Plain	Low/ Medium

18	Ryebank Rife	Low/ Medium
22	Barnham – Yapton Coastal Plain	Medium/ High
23	Walberton Upper Coastal Plain	Low
24	Fontwell Common	Medium
25	Avisford Park	Low

2.3.9. The 2011 South Downs Integrated Landscape Character Assessment identified two LCA's which are within the surrounding area of the Scheme and are located within the South Downs National Park. These include the following:

- 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.

2.3.10. The following visual receptors have been identified within 2km of the Scheme, and have been considered as part of the Landscape and Visual Impact Assessment (LVIA) as agreed through consultation with WSCC:

- Residential properties located along Eastergate Lane, Murrell Gardens, Ewen Gardens, Barnham Road, Collins Close, Fontwell Avenue and users/ visitors of Wandleys Lane Caravan Park (approximately 400m north of the Scheme);
- Users of PRoW, primarily users of PRoW ref 318. Other PRoWs recorded within 2km of the Scheme include, PRoW No 232, 297, 303, 315, 317, 319, 320 and 321;
- Users of the existing road network, including Fontwell Avenue (A29) to the west, Eastergate Lane to the north, Barnham Road to the south and Barnham Lane to the east;
- Representative Viewpoint No. 11 and 66 is 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).

ECOLOGY DESIGNATIONS (SEE CHAPTER 9 ECOLOGY AND NATURE CONSERVATION)

2.3.11. **Table 2-2** summarises the designated wildlife sites identified in the 20km surrounding area of the Scheme.

Table 2-2 - Designated Wildlife Sites

Site Name	Designation	Approximate Distance and Orientation from the Site
International Statutory Designated Sites		
Pagham Harbour	Ramsar and Special Protection Areas (SPA)	7.6km south-west
Duncton to Bignor Escarpment	Special Areas of Conservation (SAC)	7.7km north-east

Chichester and Langstone Harbours	Ramsar	10km south-west
Solent Maritime	SAC	10km south-west
Chichester and Langstone Harbours	SPA	10km south-west
Singleton and Cocking Tunnels	SAC	1km north-west
The Mens	SAC	17km north-east
Ebernoe Common	SAC	19km north
UK Statutory Designated Sites		
The Brooks (Bersted Brooks)	Local Nature Reserve (LNR)	1.3km south
UK Non-Statutory Designated Sites		
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

2.3.12. There is no Ancient Woodland within the Site, but there are 11 parcels of Ancient Woodland located north and north-east of the Site.

2.3.13. Habitats of Principal Importance within 2km of the Scheme include the following:

- Coastal and floodplain grazing marsh;
- Deciduous woodland;
- Semi-improved grassland (good quality);
- Lowland meadows;
- Lowland fens; and
- Lowland calcareous grassland.

2.3.14. Most notable is the area of traditional orchard that the Scheme intercepts.

2.3.15. There are also approximately 3 waterbodies within 500m of the Scheme which may have the potential to support great crested newt (GCN). This includes mapped ditches that may hold standing water at times. However, GCNs were confirmed likely absent from water bodies within the Survey Area.

2.3.16. The Phase 1 habitat survey identified a variety of managed and semi-natural habitats within 250m of the Scheme. These include 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. 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.

2.3.17. A protected species assessment was undertaken to extend the Phase 1 habitat survey, in line with published guidance (CIEEM, 2017). This identified the potential for the survey area to support a range of protected and notable species, including the following:

- Roosting Bats;
- Foraging and Commuting Bats;
- Badger;
- Hazel Dormouse;
- Breeding Birds;
- Wintering Birds;
- Reptiles;
- Great Crested Newt; and
- Invertebrates.

2.3.18. There are approximately 6.5ha of treed areas within the 2km surrounding area of the Site. Treed areas are those areas which appear to include trees, but which are not covered by other designations. Whilst the overall quality and quantity of trees within the area identified 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.

ARBORICULTURAL DESIGNATIONS

2.3.19. There are potentially four veteran trees within the Site. A small section is covered by Tree Preservation Order (TPO) TPO/BN/1/20 which protects 19 individual trees and one tree group. An arboricultural survey identified the presence of 77 arboricultural features including 46 trees, 25 tree groups and six hedges.

2.3.20. There is no Ancient Woodland within the Site or within the immediate surroundings. No Ancient Woodland would be affected by the Scheme.

HERITAGE AND ARCHAEOLOGY DESIGNATIONS

2.3.21. There are no listed buildings on the Site. There are 3 Listed Buildings present within the 1km study area. The closest Listed Buildings are the Thatched Cottage (Grade II), Eastergate Memorial (Grade II), and the Long House (Grade II), which are located in Eastergate village.

2.3.22. There are no World Heritage Sites, Scheduled Monuments, Registered Battlefields, or registered Parks or Gardens within the study area.

2.3.23. The Site is not located within an Archaeological Notification Area (ANA). There are 3 located within 500m of the Site.

2.3.24. The Site is not located in a Conservation Area. There are none within 1km of the Site.

WATER AND DRAINAGE DESIGNATIONS

2.3.25. There are three Statutory Main Rivers within the study area, these are Lidsey Rife, Aldingbourne Rife and Barnham Rife.

2.3.26. The study area partially lies within Flood Risk Zone 2 and Flood Risk Zone 3. A small section on the eastern boundary of the Site falls within Flood Risk Zone 2 and Flood Risk Zone 3

2.3.27. The Site is located within the Aldingbourne Rife Nitrate Vulnerable Zone (NVZ), this zone relates to surface water.

MATERIALS DESIGNATIONS

2.3.28. The majority of existing waste facilities are located within or close to the main urban areas where the waste is generated.

2.3.29. There are over 50 waste management sites in the county.

AIR QUALITY DESIGNATIONS

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

2.3.31. There are no Air Quality Management Areas (AQMAs) within the surrounding area.

2.3.32. 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.

2.3.33. Sensitive human receptors within 200m of the affected road network (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, Drovers Way, Downview Road, Murrell Gardens, Upton Brook, Sackville Gardens, Barnham Road and Eastergate Lane.

2.3.34. Lidsey landfill site (West of Woodgate) and Lidsey Oil Field is active and within the study area. Between 1998 and 2012, over 10,000 tonnes of CO₂ was released from the Lidsey Oil Field.

NOISE AND VIBRATION DESIGNATIONS

2.3.35. The closest Noise Important Area (NIA), railway RI 550, is located around Barnham Station just within 1km west of the Scheme. Further afield, there are NIAs on the A27 over 1km north of the Scheme, including NIA 12491. In addition, NIA 12493, located to the south-east on the A2 is also at a distance over 1km from the Scheme.

2.3.36. 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, Chantry Mead, 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.

POPULATION AND HEALTH DESIGNATIONS

2.3.37. There are numerous potential sensitive receptors located within 2km of the Site boundary. These include the following:

- 2 GPs;
- 7 Sports Facilities;
- 2 Dentists;
- 2 Pharmacists;
- 1 Opticians;
- 4 Primary Schools;

- 2 Secondary Schools; and
- 4 Food stores.

2.3.38. There are no National Cycle Routes within the study area.

2.3.39. There are 10 PRoWs within the study area (148, 151, 200, 200_1, 296, 318, 39, 320, 321 and 323). Of these PRoWs, only one (PRoW 318) intersects the Site.

LANDFORM, GEOLOGY AND CONTAMINATED LAND DESIGNATIONS

2.3.40. There is one authorised landfill site within the study area.

2.3.41. There are also a number of historic landfill sites within the study area.

2.3.42. Further details of designations within the Site and surrounding area are provided in Chapter 9: Ecology and Nature Conservation, Chapter 10: Landscape and Visual, Chapter 7: Noise and Vibration and Chapter 13: Archaeology and Heritage.

NATURAL RESOURCES

2.3.43. The entire Site is in Flood Zone 1 (low risk of flooding).

2.3.44. The northern part of the Site is within Groundwater Protection Zone 2c, with Zone 1c immediately to the north of the Site.

2.3.45. At the south-west of the Site at the junction of A29/B2233, there is an area of Zones 2 and 3 flood risk.

2.3.46. Land within the study area is classified as either Grade 1 and Grade 3 using the Pre-1988 Agricultural Land Classification. Online mapping indicates the presence of Grade 1, 2, 3a and 3B in the vicinity of the Site. There is the potential that land on the Site is considered to be the 'best and most versatile' agricultural land.

2.3.47. No land in Arun District has been designated as 'Contaminated' under Part IIA of the Environmental Protection Act 1990.

2.3.48. Further details are provided in Chapter 11: Water Resources and Flood Risk, Chapter 12: Geology and Soils and Chapter 9: Ecology and Nature Conservation.

KEY SENSITIVE RECEPTORS

2.3.49. There are a number of sensitive receptors that have been identified as relevant to the Scheme and these have been taken into consideration within the assessment presented in chapters 6-13. The key sensitive receptors are summarised in **Table 2-3**.

Table 2-3 – Key Sensitive Receptors

Receptor	Change likely to experience	Design stage
Fleurie horticultural Nursery	<p>Construction</p> <p>Land at Fleurie Nursery would be acquired for the construction of the roundabout on the southern B2233 Barnham Road. Temporary access may be provided to the nursery during construction.</p> <p>Operation</p>	Construction / operation

Receptor	Change likely to experience	Design stage
	Change to traffic flow in the surrounding area. Potential increase in car emissions in the area. Decreased land available at Fleurie Nursery due to the roundabout.	
One two-story residential dwelling and adjacent weatherboard structure within Folly Foot Farm	Demolition / Construction These buildings are proposed to be demolished during the construction phase.	Demolition / construction
Users of Folly Foot Farm front access and Folly House	Construction The front access to Folly House is proposed to be redesigned and landscaped during the construction phase. Operation Improved visibility for access.	Construction
Dentist Surgery (Mr N Tsolis)	Construction Potential disruption due to construction noise, emissions and alterations to traffic flows. Operation Change to traffic flow in surrounding area. Potential increase in car emissions in the area.	Construction / operation
Local Residential Properties	Construction Potential disruption due to construction noise, emissions, presence of construction traffic and plant and alterations to traffic flow. Operation Improved traffic flow in the local area, reducing traffic. Increased car emissions and noise for residential properties located near to the Scheme. Benefit of increased connectivity in the area.	Construction / operation
Local visual receptors and receptors in the LCAs	Pre-Construction / Construction Potential disruption due to construction noise, visual intrusion (presence of construction plant), emissions and alterations to traffic flow. Operation Presence of new road infrastructure including noise barrier.	Construction / operation
Aldingbourne Rife Nitrate Vulnerable Zone	Construction Surface run-off containing nitrogen on the site from construction vehicles and plant. Operation	Construction / operation

Receptor	Change likely to experience	Design stage
	Increased surface run-off containing nitrogen as a result of the increased traffic through the Scheme.	
On-site ecology including: Roosting Bats; Foraging and Commuting Bats; Badgers; Breeding Birds; Wintering Birds; Reptiles; and Invertebrates.	Construction Potential noise and light disturbance from construction activities, lighting, vehicles and plant. Potential loss of habitat, foraging and commuting ground, as vegetation within the orchard, woodland and hedgerows is to be removed. Operation Potential noise and light disturbance. The A29 re-alignment creates the opportunity to maintain the north south wildlife corridor.	Construction / Operation
Traditional Orchard	Pre-Construction / Construction Trees within the traditional orchard to be cleared during the pre-construction and construction phase.	Pre-Construction / Construction

2.4. FUTURE BASELINE

- 2.4.1. Schedule 4 of the EIA Regulations requires consideration of the likely evolution of the current baseline in the absence of the Scheme. Whilst, there are considerable limitations to the predictions that can be made about baseline conditions at a future point in time, some topic areas require projections to account for future change, such as traffic growth. This section summarises the future baseline that will be used to inform these elements of the assessment.
- 2.4.2. The Barratts David Wilson Homes development, which is located to the south and west of the Scheme, is expected to comprise up to 500 homes. Construction works are anticipated to begin in 2022 and be completed by 2027. The access to the development will be from Barnham Road, in the south and Fontwell Avenue in the north. The proposed land uses include residential development, a care home, informal open space, planting, a sustainable drainage system and a wildlife corridor.
- 2.4.3. Phase 2 of the A29 Realignment project comprises a combination of road infrastructure and a mixed use urban extension. Phase 2 will link to Phase 1 (the Scheme) at Barnham Road and will cross the West Coast Mainline and then connects with the Lidsey Road near Lidsey. The urban extension is still at the masterplan stage but is anticipated to include new residential development, a primary school, a secondary school, a mixed-use centre, open space and habitat areas. Phase 2 is expected to be constructed fully within 16 years and will be complete in 2036.
- 2.4.4. These two developments will have an urbanising effect on the area surrounding the Scheme.
- 2.4.5. Detail on the future baseline conditions considered in elements of the assessment can be found in chapters 6 to 13.

2.5. REFERENCES

- Ref. 2.1 - Arun District Council. (1992) 'Conservation Areas'. Available at: <https://www.arun.gov.uk/conservation-areas> Accessed: 11/11/2019.
- Ref. 2.2 - West Sussex County Council Landscape Character Assessment (2003). Available at: <https://www.westsussex.gov.uk/land-waste-and-housing/landscape-and-environment/landscape-character-assessment-of-west-sussex/> (Sourced November 2018)
- Ref. 2.3 - Arun Landscape Study 2006. Available at: <https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n3578.pdf&ver=323> (Sourced November 2018)
- Ref. 2.4 - South Downs Integrated Landscape Character Assessment 201. Available at: <https://www.southdowns.gov.uk/planning/planning-advice/landscape/> (Sourced November 2018)

3. DESCRIPTION OF SCHEME

3.1. INTRODUCTION

- 3.1.1. This chapter provides a description of the Scheme, including a description of how the Scheme would be constructed, alongside the assumptions used for the basis of assessment where this information is subject to confirmation. This description aligns with what planning consent is sought for, and together with the supporting plans (as identified in Section 3.6 below), what the technical assessments are based upon (technical chapters 6 – 13).

3.2. AIMS OF THE SCHEME

- 3.2.1. The A29 Realignment Scheme will create capacity for expected traffic growth and will tackle planned and potential development to support the delivery of around 11,400 new dwellings and 104,000m² of commercial development on permitted or planned development sites in this part of Arun District.

- 3.2.2. The primary aim of the A29 Realignment Scheme (Phases 1 and 2 combined) is:

- To support delivery of the Strategic Economic Plan and the Local Plan by enabling the delivery of new homes and jobs.
- Improve journey times on the A29 by avoiding the Woodgate level crossing, Lidsey bends and the A29/B2233 War Memorial Junction.

- 3.2.3. The A29 Realignment Scheme aims to alleviate issues raised in the West Sussex Transport Plan 2011-2026 (WSTP) including transport issues being a deterrent to visitors and businesses located in the Arun District. This has contributed to poor economic performance in Bognor Regis relative to the rest of West Sussex and the wider region.

- 3.2.4. Significant new housing is planned in the area which is expected to increase demand on the A29 and B2233 roads. An application for up to 500 homes (Ref 3.1) on the land to the east of Fontwell Avenue is required to help deliver a proposed 2,300 homes at the Barnham, Eastergate, Westergate site during the Arun Local Plan period (2011-2031), with potential on the site for a further 700 dwellings to be delivered after 2031 (See **Figure 3.1** for location of future residential development). This allocation of housing could not be mitigated to comply with the provisions of the National Planning Policy Framework (NPPF) regarding “severe residual cumulative impact” without the delivery of the A29 Realignment Scheme, based on the Arun District Local Plan Transport Study 2017. This development will hereafter be referred to as the ‘Adjacent Proposed Scheme’ (APS).

- 3.2.5. In order to achieve the primary aim, and in response to the problems and opportunities identified, clear objectives have been established for the A29 Realignment Scheme by the Applicant. A distinction has been drawn between the desired high level or strategic outcomes, the specific or intermediate objectives, and the operational objectives.

3.2.6. High Level or Strategic Outcomes

The desired high level or strategic outcomes (Ref. 3.2) are:

- To enable delivery of new homes in Arun District supporting delivery of around 11,400 new dwellings and 104,000m² of commercial development on permitted or planned development sites in this part of Arun District;
- To ease congestion and reduce journey times;

- To support the local economy and community;
- To create a sense of place for the strategic allocation;
- To enable delivery of new jobs;
- To improve road safety;
- To protect the local environment such as improvements to air quality; and
- To support sustainable modes of transport.

3.2.7. Specific or Intermediate Objectives

The specific or intermediate objectives are:

- To improve connectivity between Bognor Regis and the wider road networks;
- To reduce congestion on the existing A29;
- To reduce journey times and delays;
- To improve journey time reliability and reduce unforeseen delays;
- To improve the resilience of the local transport network;
- To reduce the number of road collision casualties; and
- To improve conditions for pedestrians and cyclists.

3.2.8. Operational Objectives

The operational objectives are:

- New A29 Realignment / carriageway;
- To improve journey times;
- To provide new facilities for pedestrians and cyclists;
- To improve the capacity of junctions; and
- To accommodate new roads providing access to development.

3.3. PLANNING CONTEXT

3.3.1. The A29 Realignment Scheme was identified as a priority for investment in the WSCC's Strategic Transport Investment Programme (STIP) in June 2013 (HT07 (14-15)). This investment supports the Arun Growth Deal that identifies the A29 road improvements as a key infrastructure project for delivery as early as possible.

West Sussex Transport Plan 2011-2026 (WSTP)

3.3.2. The West Sussex Transport Plan 2011-2026 (WSTP) states that transport issues are a deterrent to visitors and businesses locating in Arun District. Bognor Regis currently suffers from relatively poor transport connectivity which has contributed to poor economic performance relative to the rest of West Sussex and the wider region. The aims for Arun include exploring opportunities through new development to improve access along the A29, including the potential to provide a bridge over the railway line avoiding the Woodgate level crossing.

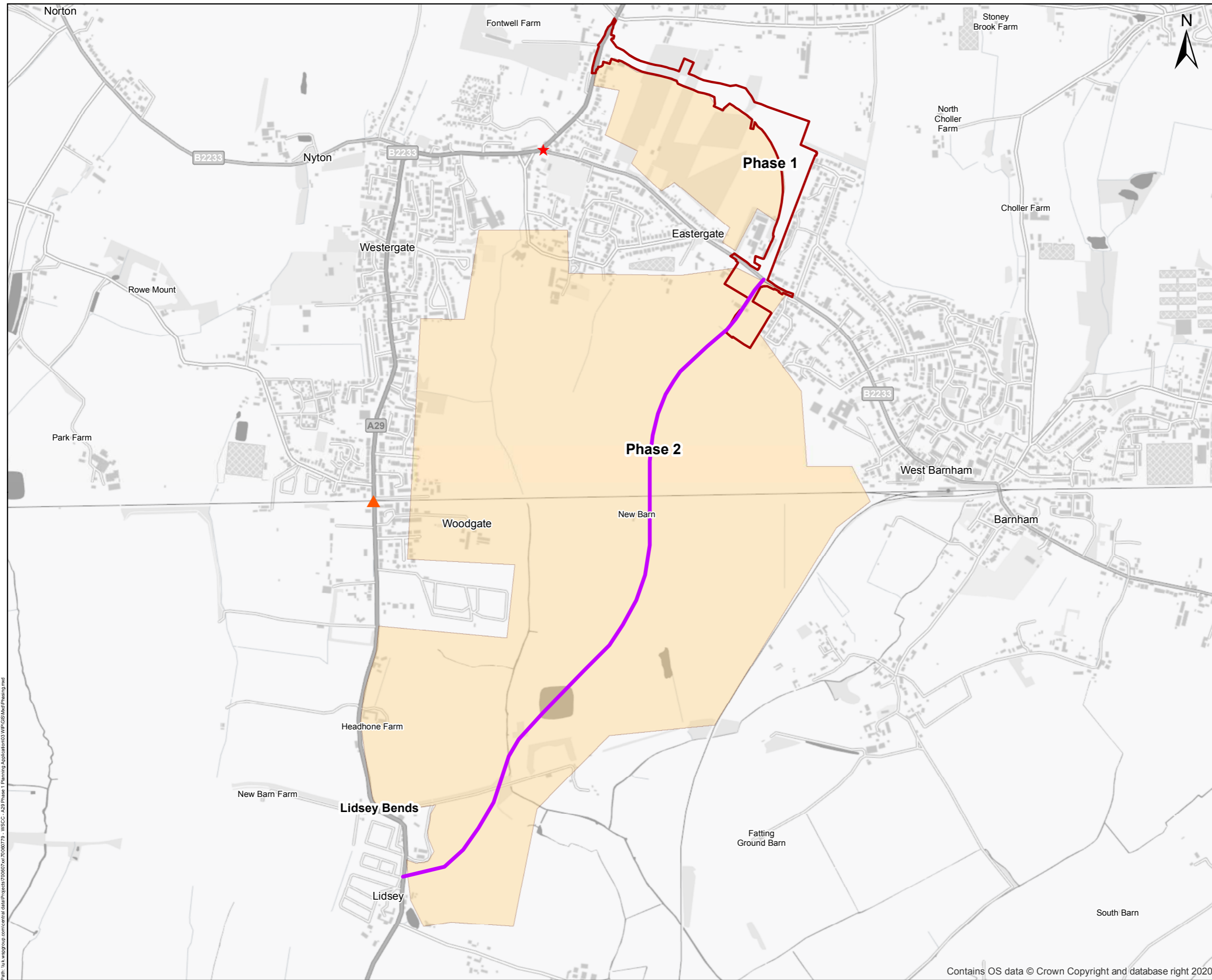
Arun Local Plan 2011-2031 (ALP)

3.3.3. The adopted Arun Local Plan 2011-2031 (ALP) identifies Bognor Regis as a strategic location for regeneration during the lifetime of the Plan. The ALP also allocates land at Barnham, Eastergate and Westergate (BEW) for strategic housing, commercial development and associated community infrastructure.

- 3.3.4. The site allocation also includes an indicative route for the A29 Realignment Scheme to provide access to the strategic infrastructure package to mitigate the cumulative impacts of development over the plan period.
- 3.3.5. There is also potential within the strategic site allocation for further development of additional housing units to be delivered beyond the end of the plan period, subject to all relevant planning decisions.

3.4. OVERVIEW OF THE SCHEME

- 3.4.1. The Transport Business Case submitted to the Coast to Capital Local Enterprise Partnership (LEP) was approved by its Investment Board on 17 October 2019. Subsequently £9.90 million of Local Growth Funding was awarded in February 2020 for the delivery of Phase 1. The LEP has also agreed that further funds totalling £2.40 million will be earmarked for the delivery of Phase 2 should additional Government funding become available to the LEP.
- 3.4.2. The A29 Realignment Scheme will be delivered in two phases as shown in **Figure 3.1**. Phase 1 is approximately 1.3km long from the A29 south of Eastergate Lane to a new junction with Barnham Road, Phase 2 from Barnham Road to a new junction on the A29 south of Lidsey bends. The Scheme relates to Phase 1 (North) only and is the primary focus of this Environmental Statement and Environmental Impact Assessment. Phase 2 (South) will be addressed through assessment of cumulative effects and will be subject to a subsequent planning application. Phases 1 and 2 combined is herein referred to as the A29 Realignment Scheme.
- 3.4.3. The Scheme shown in **Appendix 3-1**, includes the proposal to create a new approximately 1.3km, single carriageway road in an arc shape from north-west to south east, connecting with the eastern side of the A29, and the northern side of the B2233.
- 3.4.4. Key features of the Scheme would include the following:
- 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 four-arm roundabout at the southern end, at a new junction with the B2233 Barnham Road;
 - One uncontrolled pedestrian crossing to enable users of the Public Rights of Way (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;
 - A 30 mph (48 kph) speed limit on the Scheme;
 - New access to the Fordingbridge Industrial Estate (Halo) site from the realigned A29; and
 - Land at Fleurie Nursery would be permanently required for the construction of the roundabout on the southern B2233 Barnham Road.



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

- ★ War Memorial
- ▲ Woodgate Level Crossing
- Phase 2 road alignment from emerging masterplan
- Phase 1
- Future Residential Development



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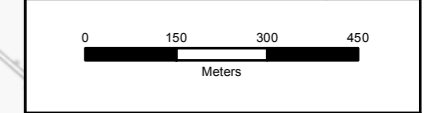
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FINAL

Job Title
**A29 Phase 1
Planning Application**

Drawing Title
**Figure 3.1 - Phase 1 and
Phase 2**

Scale at A3

Drawn	UKCJR003		
Stage 1 check	AS	Stage 2 check	DY
Originated	DY	Date	08/10/2020



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- 3.4.5. One occupied two-storey residential dwelling, courtyard and adjacent weatherboard structure located off the existing A29 to the south of Eastergate Lane are proposed to be demolished (see **Appendix 3.1 – Site Clearance Plan**).
- 3.4.6. The front access to Folly House off the existing A29 will be redesigned and landscaped but still allow access to Folly House.
- 3.4.7. The substation relocation would comprise one transformer placed on a reinforced concrete base, approximately 4m by 4.5m, with an adjoining cable area approximately 3m by 4m. On the north side of the substation would be a parking area approximately 3m by 8m. A grasscrete area is proposed in front of the substation to enable vehicles to reverse off Fontwell Avenue.
- 3.4.8. During the construction phase, site construction access would be via a temporary track from the B2233 between Fordingbridge Industrial Estate and Murrell Gardens. Construction access may also be taken from the A29, 100m south of Eastergate Lane. The main construction compound (A) will be located within Fleurie Nursery land, south of Barnham Road.

3.5. PLANS AND DESIGN ASSUMPTIONS

- 3.5.1. The Scheme is shown in **Figure 3.2** and details provided in **Appendix 3.1**. The plans submitted in support of the planning application, are summarised below:
- The Scheme (site plan for planning);
 - Scheme location plan;
 - Site clearance plans;
 - Site boundary/site layout plan;
 - Cross sections/long sections;
 - Proposed elevations (noise barrier); and
 - Preliminary design plans (including drainage and lighting).

PLANNING APPLICATION BOUNDARY

- 3.5.2. All temporary and permanent activities relating to the construction and operational activities of the Scheme would be contained within the planning application boundary as illustrated in **Figure 1.3: Site Boundary**. The EIA is based upon this planning application boundary.

SCHEME LAYOUT / LAND USE

- 3.5.3. The Scheme will involve the development of a linear road structure on a greenfield site in Eastergate. The Scheme will extend across agricultural land in an arc shape between the A29 to the west and the B2233 to the south.

CLIMATE CHANGE RESILIENCE

- 3.5.4. Each chapter within this ES includes consideration of Schedule 4(5) to the EIA Regulations relating to the likely significant effects of the Scheme on the environment and the vulnerability of the Scheme to climate change (Ref. 3.3).
- 3.5.5. The criteria used for the drainage design is based on WSCC's Adoptable Highway Drainage and Sustainable urban Drainage Systems (SuDS) Guidance Note for Developers (Version 3, March 2019). The principal criteria are listed below:

- Baseline discharge: QBAR for the receiving catchment (approximately a 1 in 2.3 year return period);
- Highway drains design return period: 1 in 5 year return period (flood zone) + 40% allowance for climate change;
- Exceedance check: No flooding in a 1 in 30 year return period; and
- Flood flows: 1 in 100 year return period + 40% allowance for climate change.

3.5.6. Consideration of climate change for the drainage strategy is considered under 'Proposed Drainage'.

OPERATIONAL ACCESS AND MOVEMENT

- 3.5.7. There are two proposed access routes for the Site, both of these would be used for the Scheme. The access route at the western end will join Fontwell Avenue, which runs north-to-south along the western side of the Site. The other access route will join the B2233 Barnham Road which runs east-to-west along the southern side of the Site.
- 3.5.8. Traffic from the existing A29 route will use the A29 Realignment route, alleviating pressure on the surrounding transport network.
- 3.5.9. Residents from the Adjacent Proposed Scheme (APS) will also utilise the A29 Realignment Scheme in the operational phase (there will also be access to the APS directly from Barnham Road).
- 3.5.10. The Scheme will include a new access to the Fordingbridge Industrial Estate (Halo) site, north of the roundabout on Barnham Road.
- 3.5.11. Non-motorised users will be able to use the Scheme via a 3m wide footpath/ cycleway (Shared Use Path) along the entire length of the Scheme. An uncontrolled pedestrian crossing with a 2.5m wide central island is incorporated into the road design to enable users of the PRoW to safely cross the carriageway. The Shared Use Path will connect to existing PRoW adjacent to the Site.

PROPOSED LEVELS AND ELEVATIONS

- 3.5.12. The topography within the Site is relatively level, ranging from 6 to 8m Above Ordinance Datum (AOD). The existing ground profile in general falls from Fontwell Avenue towards Barnham Road.
- 3.5.13. Street lighting at the junctions will be the tallest feature associated with the Scheme. The tallest structures will be the lighting columns which will be 6-8m in height and therefore will not exceed 10m AOD (allowing for raised foundations).

PROPOSED EXCAVATION EXTENTS

- 3.5.14. The majority of the new carriageway will be built upon a small embankment to avoid road construction within areas of high ground water levels. This improves the long term durability of the Scheme and will eliminate the need for sub-surface drainage. The only area of new carriageway that will be in cutting (albeit a very small area) is at approximately Chainage 15m to 100m, before being on slight embankment for the remainder of the Scheme. Cutting depths are currently envisaged to be up to 2m. Highway gradients have been set to minimums (or just above minimum) to minimise fill above ground levels (see **Appendix 3.1 – Cross Sections**).
- 3.5.15. Drainage swales are proposed adjacent to the carriageway – in these areas the road surface runoff is “over the edge” into the swales and therefore the swales follow the same gradient of the road. Filter pipes are proposed to generally run under the swales to convey the higher critical design storm flows requiring excavation of up to 1.7m from the adjacent new road finished level.

- 3.5.16. Excavations for the reinforced concrete base for the relocated substation on Fontwell Avenue would be up to 1.5m.
- 3.5.17. Three new ponds are required (see **Figure 1.3** and see **Appendix 3.1 – Preliminary Designs**):
- Pond 2 (at Ch 500) is an infiltration pond and is currently proposed to have a volume of some 400m³, approx. 1m deep below EGL);
 - Pond 3 (at Ch 800) is an attenuation pond and is currently proposed to have a volume of some 900m³, approx. 1m deep below EGL; and
 - Pond 4 (to the south of Barnham Road) is an attenuation pond and is currently proposed to have a volume of some 900m³, approx. 1m deep below EGL.
- 3.5.18. Infiltration crates are proposed within and adjacent to the proposed Barnham Road roundabout.

PROPOSED DEMOLITION

- 3.5.19. One two-storey residential dwelling, courtyard and adjacent weatherboard structure will be demolished. Please refer to **Appendix 3.1 – Site Clearance Plan**.

PROPOSED DRAINAGE

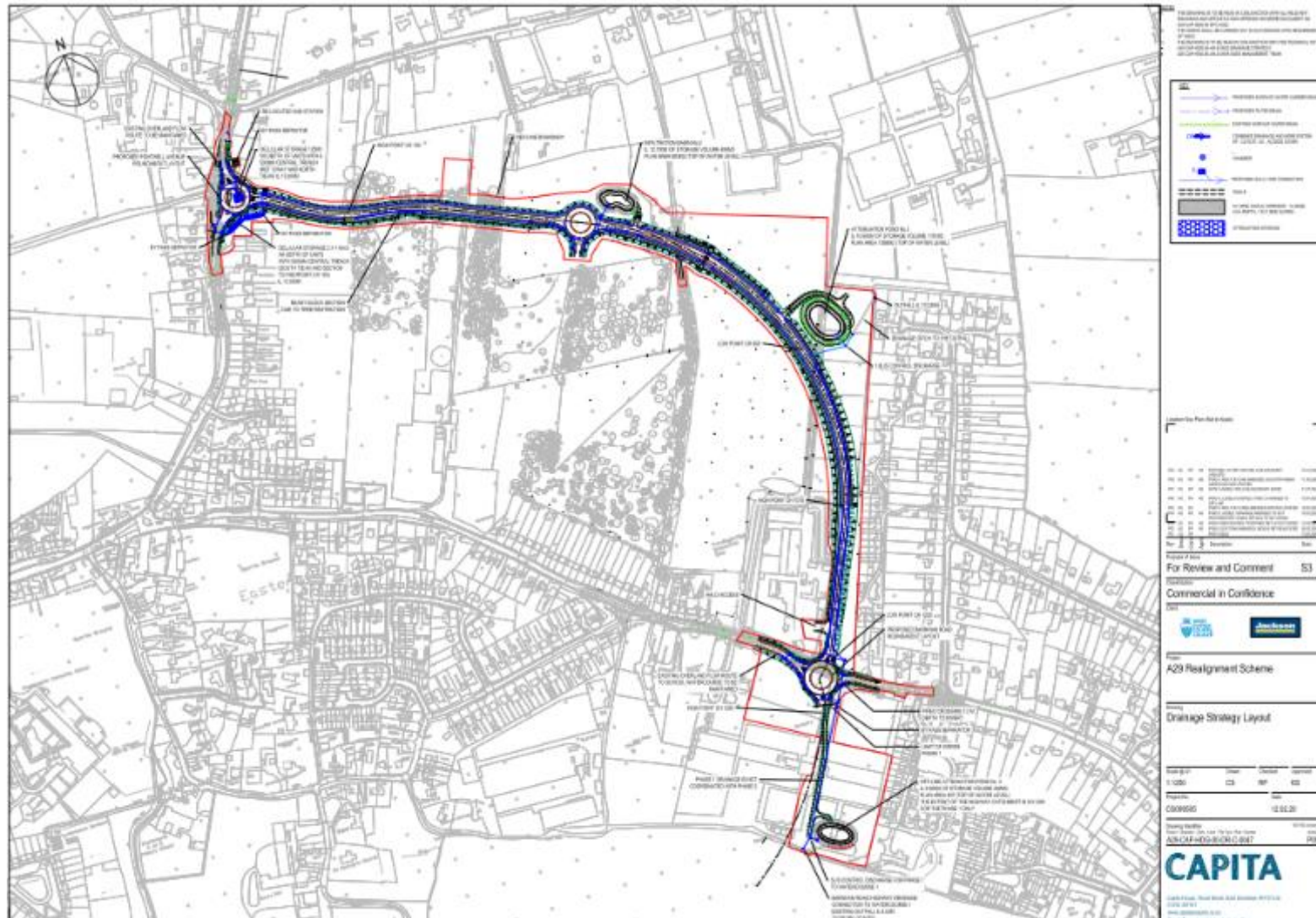
- 3.5.20. The Scheme crosses open land, and as a result will increase the impermeable area, resulting in the potential for a higher rate of surface water runoff, without appropriate mitigation.
- 3.5.21. To mitigate the potential increase in peak surface water run-off rates, a Surface Water Management Strategy has been developed for the Scheme, in accordance with the requirements of the NPPF.
- 3.5.22. Based on local and national guidance, the surface water generated by the Scheme will be restricted to greenfield run-off rate and designed for an increase in rainfall due to climate change (see Section 3.5).
- 3.5.23. The required surface water attenuation volumes can be achieved by a combination of swales and filter drains along both sides of the Scheme. A grass filter strip is also proposed between the future carriageway and the proposed swales.
- 3.5.24. The Scheme does not cross any watercourse.
- 3.5.25. Infiltration and attenuation basins are required in four locations along the Scheme. The Flood Risk Assessment (FRA) assesses the drainage within the Site. The location of the drainage features are shown in **Figure 3.2**.
- 3.5.26. The water quality of the surface water discharge generated at the proposed A29 has been assessed using the HAWRAT method and it demonstrated that the proposed SuDS features will mitigate the potential contamination arising from the Scheme.
- 3.5.27. The new link road has a number of drainage catchments. Each catchment is to have a highway drainage system that is proposed to discharge, under gravity, to an underground storage structure or surface pond. The outflow from these storage areas is to either be to the ground (infiltration) or to a receiving watercourse. Where the flow is to a watercourse, the rate of discharge is to be restricted to the green field run-off rate.
- 3.5.28. Grassed swales are proposed along the side of the link road which, together with the surface ponds, enable contaminants to be removed from the highway surface water run-off prior to its discharge to the ground or to a receiving watercourse. At the roundabout junction areas, where it is impractical to

use swales, the highway drainage system is to include conventional oil/petrol interceptor units that retain any polluting hydrocarbons upstream of the storage areas.

3.5.29. In summary, proposed discharge rates to watercourses are as follows:

- Barnham Lane Ditch: 1.8 l/sec; and
- School Ditch: 5 l/sec.

Figure 3-2 - Drainage Features



EMISSIONS, WASTES AND EFFLUENTS

- 3.5.30. Emissions will be limited to light and road drainage. Artificial light is considered in **Appendix 10.4** and assessed in **Chapter 10 – Landscape and Visual** while road drainage is explained in **Appendix 11.2** and assessed in **Chapter 11 – Water Resources and Flood Risk**.

PRIMARY MITIGATION

Noise Barrier (Ref. 3.4)

- 3.5.31. Following the noise assessment (**Chapter 7 – Noise and Vibration**) a noise barrier now forms part of the Scheme (see **Figure 7.2, 7.3, 7.5 and 7.6** and **Appendix 3.1 - Proposed Elevations Noise Barrier**). This is located on the eastern side of the Scheme and runs between the new road alignment and the properties on Murrell Gardens. The barrier is 3m tall and approximately 440m in length and composed of absorptive materials (to prevent noise reflecting across the road to the 'Adjacent Proposed Scheme' (see **Chapter 4 – Consideration of Alternatives**).

Landscaping and Habitat Replacement

- 3.5.32. The Landscape Strategy (**Appendix 3.3**) has been prepared to mitigate effects on biodiversity (habitats), landscape and visual receptors and for Biodiversity Net Gain metrics. The findings of these assessments are covered in Chapter 9: Ecology and Nature Conservation and Chapter 10: Landscape and Visual.

PREVENTION OF MAJOR ACCIDENTS / DISASTERS

- 3.5.33. 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. The Scheme is also expected to reduce the risks of accidents from the current situation.
- 3.5.34. Effects related to the risk of major accidents and/or disasters are not considered to be significant.
- 3.5.35. The Planning Application includes a Road Safety Audit (70060779-RSA1) which assesses the safety of the new infrastructure and sets out recommendations where required.

3.6. CONSTRUCTION PROPOSALS

PROGRAMME

- 3.6.1. The construction programme to be procured, is expected to follow the timing outlined in **Table 3-1**. The anticipated duration of the construction period is 12 months.

Table 3-1 - Construction Programme

Stage	Programme
Construction compound construction	Early to mid-2021
Site clearance (including demolition)	Early to mid-2021
Utilities Diversion	Early to late 2021
Construction of Road	Early to late 2021
Street Lighting	Mid to late 2021
Landscaping	Late 2021 to early 2022

PROPOSED KEY CONSTRUCTION ACTIVITIES

3.6.2. The key construction activities are summarised below (although there is likely to be some overlap between each stage / individual processes):

- Creation of a temporary construction compound at the Fleurie Nursery site;
- Clearance and creation of temporary construction access via a temporary track from the B2233 between Fordingbridge Industrial Estate and Murrell Gardens. Construction access may also be taken from the A29, 100m south of Eastergate Lane;
- Installation of temporary fencing and/or hoarding;
- Vegetation and tree removal and use of protective measures around retained features;
- Demolition of one two-storey residential dwelling, courtyard and adjacent weatherboard structure, both of which are occupied;
- Dewatering (if necessary) in trenches and excavations (potentially on-going activity throughout construction phase);
- 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 including noise barriers;
- Construction of the Scheme; and
- Hard and soft landscaping including environmental/ecological mitigation if required.

3.6.3. A series of assumptions have been made in relation to the proposed Site preparation, earthworks and construction activities following discussions with the Project Team. Where assumptions have been made, it is stated.

SECURITY AND FENCING

- 3.6.4. Security and safety of all plant and equipment will be the responsibility of the Contractor.
- 3.6.5. All plant will be fenced off where the Contractor sees fit; during non-operational times.
- 3.6.6. It is not envisaged that separate security arrangements (such as security guards) will be required for the Site.
- 3.6.7. 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.

CONSTRUCTION EMPLOYMENT

- 3.6.8. It is expected that up to 50 people will be employed on site per day at the peak at construction. This is not considered to have a significant effect on local employment numbers.

CONSTRUCTION ACCESS / HAULAGE ROUTES, PARKING AND TRAFFIC

- 3.6.9. It is anticipated that there will be no more than 50 persons working on site at any one time, and whilst car sharing/public transport/cycling to work will be encouraged, the proposed car parking arrangements cater for these expected vehicle numbers, with spare capacity within the three site compounds to increase this if necessary. Vehicle numbers/ movements are outlined in **Table 3-2**.

Table 3-2 - Vehicle numbers

Vehicle Type	Envisaged Maximum Daily Number to Site
Car / Delivery Van	40 Movements Daily
Heavy Earth Moving Vehicle (e.g. excavator)	20 Movements Daily
Heavy Goods Vehicle	75 Movements (envisaged 25% to northern compound, 75% to main southern compound), but majority of time average of 20 movements daily.

- 3.6.10. Parking for road vehicles will be off site at the main compound south of Barnham Road. Plant will be made safe and remain in the works area overnight (and avoid additional vehicle movements to and from the compound). Deliveries will only be arranged for during operational hours.
- 3.6.11. Normal site working (construction) hours are proposed to be the following which are in keeping with the WSCC guidelines:
 - Monday to Friday 7:00 to 18:00 (please note, Noise Generating Activities (as defined by BS 5228) will be limited to an 8:00 start); and
 - Saturdays 8:00 to 13:00.
- 3.6.12. Normal site operations are expected to be limited to the hours above. However, should works outside the hours specified above (including night-time working) be required then prior consent would need to be sought from WSCC under Section 61 of the Control of Pollution Act 1974.

CONSTRUCTION COMPOUNDS

- 3.6.13. It is likely that the following three site compounds will be used during the construction of the Scheme – A, B and C (see **Appendix 3.1 – Site Plan**).
- Compound A (the main compound) will be located just south of Barnham Rd on the Fleurie Nursery site.
 - This compound will be for the location of the main site offices, staff parking, meetings, contract admin, welfare etc.
 - Compound B, located just off Fontwell Avenue
 - This will provide localised parking for site staff, welfare and some plant and materials.
 - Compound C will be located half-way along the Scheme adjacent to Pond 3, offline from the new carriageway alignment.
 - It is envisaged this compound will be used for materials storage.
- 3.6.14. Each compound will be in-situ for the whole duration of the construction works (as indicated within the programme).

TEMPORARY DRAINAGE SOLUTION

- 3.6.15. Ground water levels on site have dictated the vertical alignment such that the majority of the new carriageway will be built on a (slight) embankment. For the majority of the construction works are expected to be “above” ground water levels and are not expected to require excessive temporary drainage solutions.
- 3.6.16. The Contractor will programme the works to minimise excavations during winter in so far as reasonably practicable. However, in the event of requiring to de-water the excavations the Contractor will plan ahead by applying for temporary drainage discharge permits. Silt and other contaminants will be removed to an acceptable level before any discharge, and the Contractor will consult with the local Environment Agency land and water team to establish what levels are acceptable and what monitoring is required. The Contractor will use standard methods, such as silt busters and/or filter bags or socks, to remove silt to achieve the required water quality.

VEGETATION REMOVAL, WORKS AND RETENTION

- 3.6.17. As outlined in the Site Clearance Plan (**Appendix 3.1**) the following vegetation will be removed as a result of the Scheme:
- Vegetation on the western end of the scheme for the visibility splay on Fontwell Avenue;
 - Trees within the former orchard;
 - Hedges on the boundaries of the former orchard;
 - Hedge on the edges of the Public Right of Way (PRoW) Footpath 318; and
 - Part of the hedgerows on the edges of the track north of the Halo site.
- 3.6.18. Retained trees and hedgerows are shown in the Landscape Strategy (**Appendix 3.3**).
- 3.6.19. **Appendix 3.1** shows the planned site clearance.

EARTHWORKS AND SITE LEVELS

Table 3.3 outlines initial approximate cut and fill volumes based on the difference between the existing ground surface and proposed road surface. It is assumed that 80% of all cutting material can be re-used within the works, with the remaining requiring disposal off-site. Disposal is likely to be to tip in Bordon, East Hampshire, which is approximately 40 miles northeast of the Site.

Table 3-3 - Cut/ Fill Balance

Name	Cut Factor	Fill Factor	2d Area (m ²)	Cut (m3)	Fill (m3)	Net (m3)
Ch 0 – Ch 675	1.000	1.000	22000	3000	9850	6850
Ch 675 – Barnham	1.000	1.000	18000	3500	8200	4700
Pond 2				2000		-2000
Pond 3				3500		-3500
Pond 4				3000		-3000

CONSTRUCTION OF BUILDINGS / HARDSTANDING AND INSTALLATION OF PLANT / EQUIPMENT

3.6.20. **Table 3.4** provides an estimate for the plant used throughout the construction of the Scheme.

Table 3-4 - Estimated Plant use

Works	Small Excavator	Large Excavator	Trench Roller	Compact Roller	Wacker Plate	Road saw	Generator	Dozer - D6	Compressor & Breaker	8 Wheeler Lorry	Water Pump 100mm	Small Dumper 9t	Large Dumper ADT
Barnham Rd													
Barnham Compound (Compound A)		X		X			X			X		X	
Barnham Roundabout	X	X	X	X	X	X			X	X	X	X	
Southern Section - to Pond 4	X	X		X				X		X	X	X	X
Fontwell Avenue													

Fontwell Compound (Compound B)		X		X			X			X		X	
Fontwell Roundabout	X	X	X	X	X	X			X	X		X	
Demolition		X						X	X	X		X	
Northern Section - Road	X	X		X				X		X		X	X
Balancing ponds		X		X				X		X	X	X	X
Central Road section (including central roundabout and Compound C)	X	X		X				X		X	X	X	X

CONSTRUCTION WASTE

- 3.6.21. 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 the minimal quantity of material will be used and minimal waste will be proposed. As such, a materials and waste chapter has been scoped out of this Environmental Statement.

3.7. IMPLEMENTATION OF DESIGN PLANS AND STRATEGIES

- 3.7.1. **Table 3.5** outlines the design strategies that will be implemented as part of the Scheme.

Table 3-5 - Design Plans and Strategies

Plan/ Strategy	Appendix Number
Green Infrastructure Strategy	Appendix 3.2
Landscape Strategy	Appendix 3.3
Landscape Maintenance and Management Plan	Appendix 10.4
Lighting Assessment (including strategy)	Appendix 10.2
Surface Water Drainage Strategy (attached to the Flood Risk Assessment)	Appendix 11.1

KEY CONSTRUCTION PRACTICES

- 3.7.2. The works on Site would be undertaken in accordance with the UK's 'Considerate Constructors Scheme' to help ensure that contractors carry out their operations in a safe and considerate manner, and actively minimise environmental risks.

- 3.7.3. All construction works would be undertaken with suitable temporary drainage and pollution prevention measures in place, in accordance with the Environment Agency's Pollution Prevention Guidance Notes.
- 3.7.4. A Construction Environmental Management Plan (CEMP) will detail the environmental controls / protection measures and safety procedures that would be adopted during construction. An outline CEMP is included as **Appendix 3.4**.

3.8. DEMOLITION/DECOMMISSIONING PROPOSALS

- 3.8.1. One residential property and adjacent weatherboard structure within the Site boundary is proposed to be demolished as part of this Scheme. This property is identified in **Appendix 3.1** on the Site Clearance Plan.
- 3.8.2. Details on demolition and Site preparation can be set out in a Construction Method Statement (CMS) and incorporated within the Contractor's (CEMP), which can be secured with a planning condition.
- 3.8.3. Based on the type of scheme and the likely operational timeline, decommissioning has not been considered as part of this EIA. It is anticipated that the Scheme will remain operational for at least 60 years.

3.9. REFERENCES

- Reference 3.1: Wyg, 2019. Barnham Road, Eastergate Environmental Impact Assessment, Scoping Report BDW, November 2019
- Reference 3.2: WSP, 2019, A29 Realignment -Transport Business Case
- Reference 3.3: IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation. [Online] accessed via [https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20\(1\).pdf](https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20(1).pdf), 29 November 2018
- Reference 3.4: BS 5228-1:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites. Noise

4. CONSIDERATION OF REASONABLE ALTERNATIVES

4.1. INTRODUCTION

4.1.1. This chapter outlines the reasonable alternatives to the Scheme that have been considered by the Applicant, together with the principal reasons for proceeding with the Scheme. This chapter covers the alternatives investigated during development of the A29 realignment as a whole where they are relevant to Phase 1, as well as options investigated for the Scheme (Phase 1 only).

REQUIREMENT FOR THE CONSIDERATION OF ALTERNATIVES

4.1.2. Schedule 4 of the EIA Regulations (Ref. 4.1) states that an ES should include:

4.1.3. “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”.

4.1.4. To accord with the EIA Regulations, the following alternatives have been considered:

- ‘Do Nothing’ Scenario;
- Alternative Alignments; and
- Design Alternatives.

4.2. ‘DO NOTHING’ SCENARIO

4.2.1. The ‘do-nothing’ scenario would result in the A29 staying as it is today. The existing problems would remain, including:

- Congestion - during the peak periods, notably at the Woodgate level crossing and War Memorial junctions;
- Journey time unreliability - at busy times, journey times can vary considerably during peak periods, making it difficult for road users to predict the time needed for their journeys; and
- Road Accidents – experienced along the entire A29 route particularly at locations such as the Lidsey Bends.

4.2.2. Background traffic growth will make existing congestion problems worse, but without mitigation, the level of traffic generated by the planned development in the area would exacerbate these issues. The A29 Realignment Scheme has been identified as a key component of the Strategic Infrastructure Package to support the Arun Local Plan and ensure that impacts are satisfactorily mitigated. The Strategic Transport Business Case (Ref. 4.2) set out when, where and by how much traffic will increase on existing roads in the absence of the Scheme. For these reasons the ‘Do-nothing’ scenario has not been considered further.

4.3. ALTERNATIVE ALIGNMENTS

4.3.1. Several feasibility and viability studies have been undertaken for the Scheme since 2012, the main studies are:

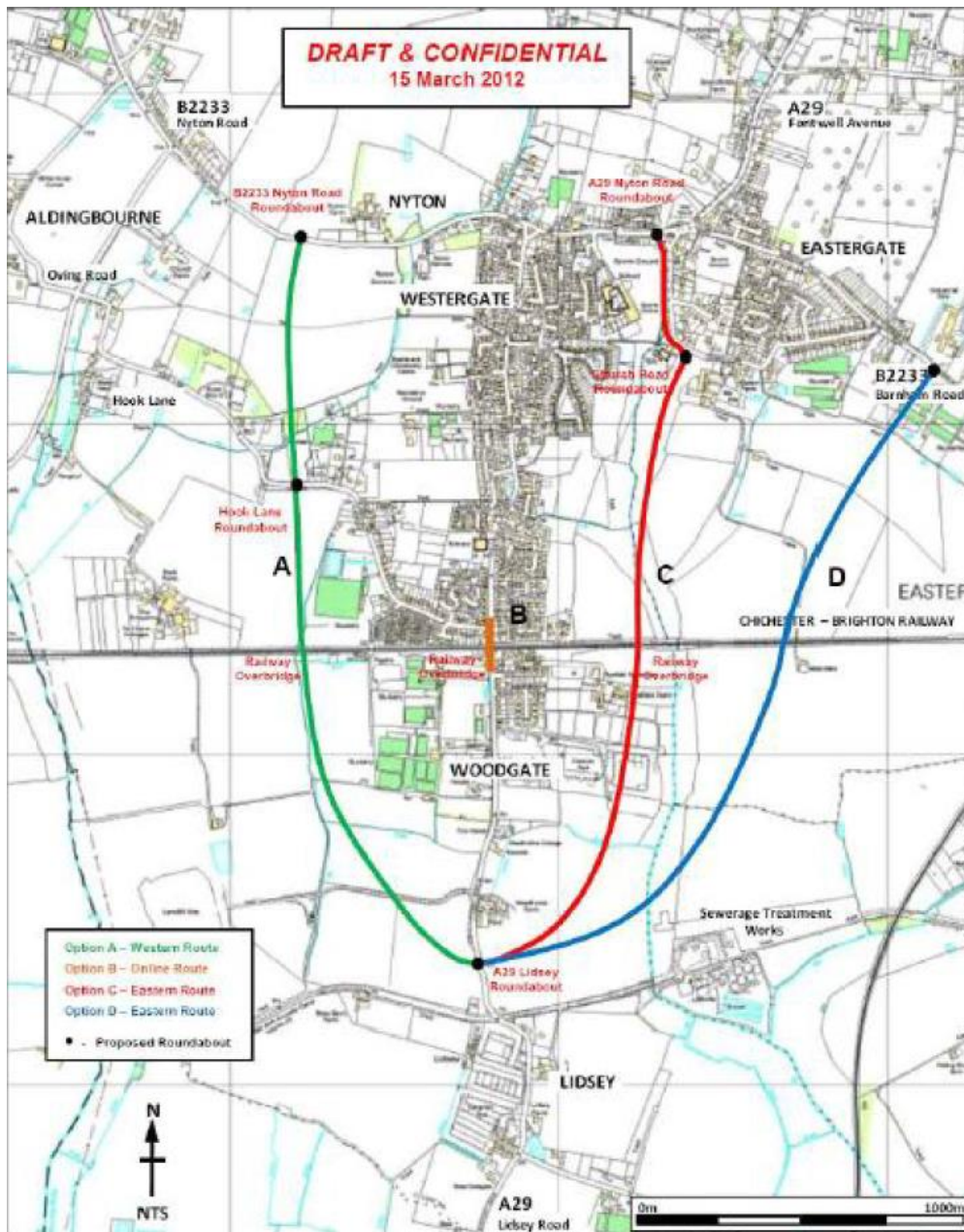
- Parsons Brinckerhoff. A29 Woodgate Study, 2012 (Ref. 4.3);
- MVA. A29 Realignment Viability Study, 2013 (Ref. 4.4); and

- Systra. A29 Realignment Feasibility Study (Ref. 4.5), 2014.

PARSONS BRINCKERHOFF. A29 WOODGATE STUDY, 2012

- 4.3.2. In 2012, Parsons Brinkerhoff were appointed by WSCC on behalf of Arun District Council to undertake a feasibility study into bypassing the level crossing on the A29 at Woodgate.
- 4.3.3. The A29 Woodgate Study considered four local route options as shown in **Figure 4-1** below. Two of these of routes emerged as potential options to consider, these being route option A (a western alignment) and option D (an eastern alignment).

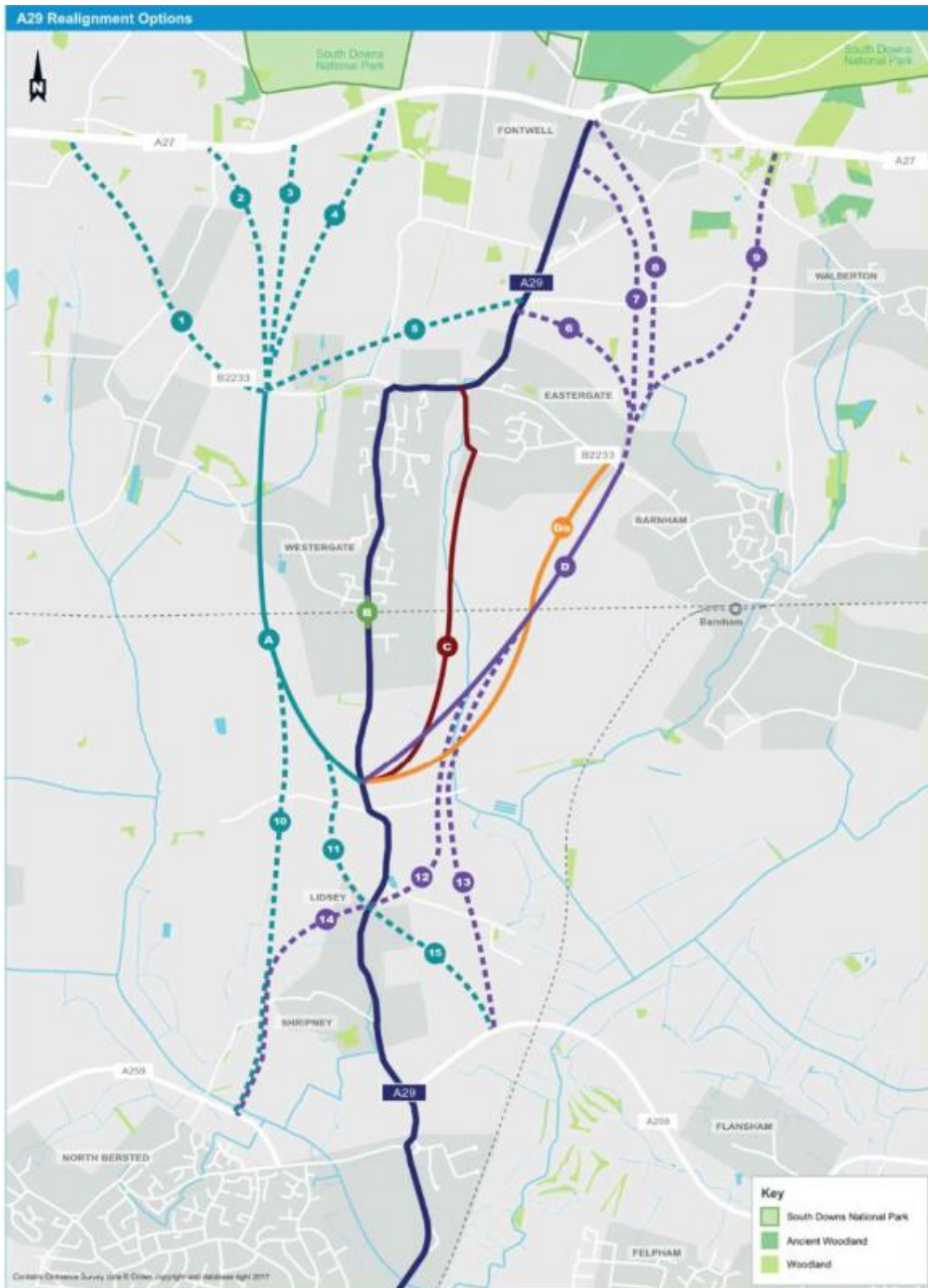
Figure 4-1 - Parsons Brinkerhoff Options -2012



MVA. A29 RE-ALIGNMENT VIABILITY STUDY, 2013

- 4.3.4. In April 2013, MVA Consultancy (now SYSTRA Ltd) were appointed by Arun District Council to undertake an A29 Realignment Viability Study. The key driver of the Study was to identify a preferred route alignment for the A29 Realignment which bypasses the railway crossing at Woodgate and ties in appropriately with the existing highway.
- 4.3.5. The A29 Realignment Viability Study identified a number of potential route alignments options which could extend from the routes A and D (both routes previously identified as part of the A29 Woodgate Study), connecting them back into the existing highway network. These initial alignment options are shown in **Figure 4-1** and were based on:
- Five extensions north from Route A;
 - Four extensions north from Route D;
 - Two extensions south from Route A, one of which has a further option to extend the alignment to provide a direct access to the Bognor Regis Relief Road to the east of the existing A29; and
 - Two extensions south from Route D, one of which has a further option to extend the alignment to provide a direct access to the Bognor Regis Relief Road to the west of the existing A29.
- 4.3.6. The A29 Realignment Viability Study used a two-stage evaluation process to assess the performance of the options and refine the long list of options.

Figure 4-2 - Options identified in the A29 Realignment Viability Study (2013)



4.3.7. The initial ‘high level’ assessment was then carried out for each alignment option which ranked them on an evaluation criteria consisting of:

- Environmental Impact;
- Deliverability (in engineering terms);
- Traffic Impacts;
- Road Safety Impacts; and
- Scheme Costs.

Figure 4-3 - First Stage Evaluation Summary Table (Northern Extensions to Route A)

	Option 1	Option 2	Option 3	Option 4	Option 5
Environmental Impact	Good	Average	Very Good	Good	Poor
Deliverability	Very Good	Average	Very Good	Good	Poor
Traffic Impact Benefits	Average	Good	Good	Good	Average
Road Safety Benefits	Average	Very Good	Very Good	Very Good	Average
Scheme Costs	Very Good	Poor	Good	Poor	Poor

Figure 4-4 - First Stage Evaluation Summary Table (Northern Extensions to Route D)

	Option 6	Option 7	Option 8	Option 9
Environmental Impact	Good	Average	Poor	Very Poor
Deliverability	Very Good	Poor	Poor	Good
Traffic Impact Benefits	Poor	Good	Very Good	Good
Road Safety Benefits	Average	Good	Very Good	Very Good
Scheme Costs	Good	Average	Poor	Average

Figure 4-5 - First Stage Evaluation Summary Table (Southern Extensions to Route A)

	Option 10	Option 11	Option 11 & 15
Environmental Impact	Good	Good	Good
Deliverability	Average	Very Good	Very Good
Traffic Impact Benefits	Very Good	Average	Very Good
Road Safety Benefits	Very Good	Good	Very Good
Scheme Costs	Poor	Good	Good

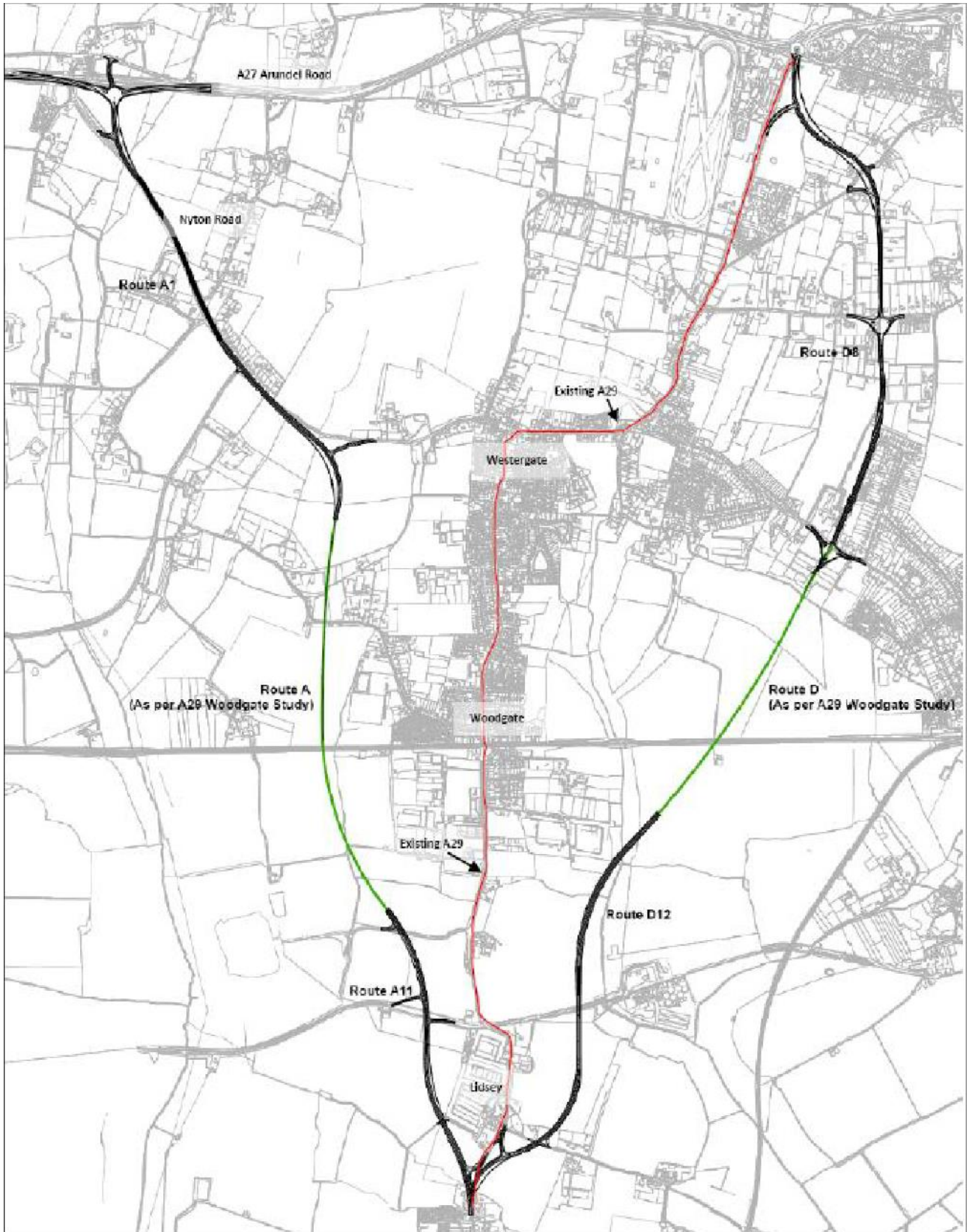
Figure 4-6 - First Stage Evaluation Summary Table (Southern Extensions to Route D)

	Option 12	Option 13	Option 12 & 14
Environmental Impact	Good	Good	Good
Deliverability	Very Good	Very Good	Average
Traffic Impact Benefits	Average	Very Good	Very Good
Road Safety Benefits	Good	Very Good	Very Good
Scheme Costs	Good	Good	Poor

4.3.8. As a result of the first stage evaluation, the following alignment extensions were identified to be taken forward to the second stage of assessment. These alignment options were renamed as follows to take into account their links with the routes A and D identified within the previous A29 Woodgate Study.

- Northern extension to Route A = A1 (also referred to as part of the A29 western bypass option);
- Southern extension to Route A = A11 (also referred to as part of the A29 western bypass option);
- Northern extension to Route D = D8 (also referred to as part of the A29 eastern bypass option); and
- Southern extension to Route D = D12 (also referred to as part of the A29 eastern bypass option).

Figure 4-7 - Second stage options from A29 Realignment Viability Study (2013)



4.3.9. **Table 4-1** provides a comparison of the environmental review of the options considered in the A29 Realignment Viability Study.

Table 4-1 - Comparison of Environmental Constraints of Realignment Viability Study Options. (Western Bypass versus Eastern Bypass)

A29 Western Bypass Scenario (Routes A1, A and A11)	A29 Eastern Bypass Scenario (Routes D8, D and D12)
Option A1 – Northern Extension Flood plain constraints need to be considered	Option D8 – Northern Extension Lesser environmental constraints compared to Option A1 although greatest local impacts on built environment with property demolitions likely.
Option A – Central Section Minimal environmental issues beyond floodplain constraints	Option D – Central Section Minimal environmental issues but floodplain constraints
Option A11 – Southern Extension Flood plain constraints and impact on West Sussex Internal Drainage District to be considered within design	Option D12 – Southern Extension Floodplain constrains, impact on West Sussex Internal Drainage District and crossing of Lidsey Rife river need to be considered within design.

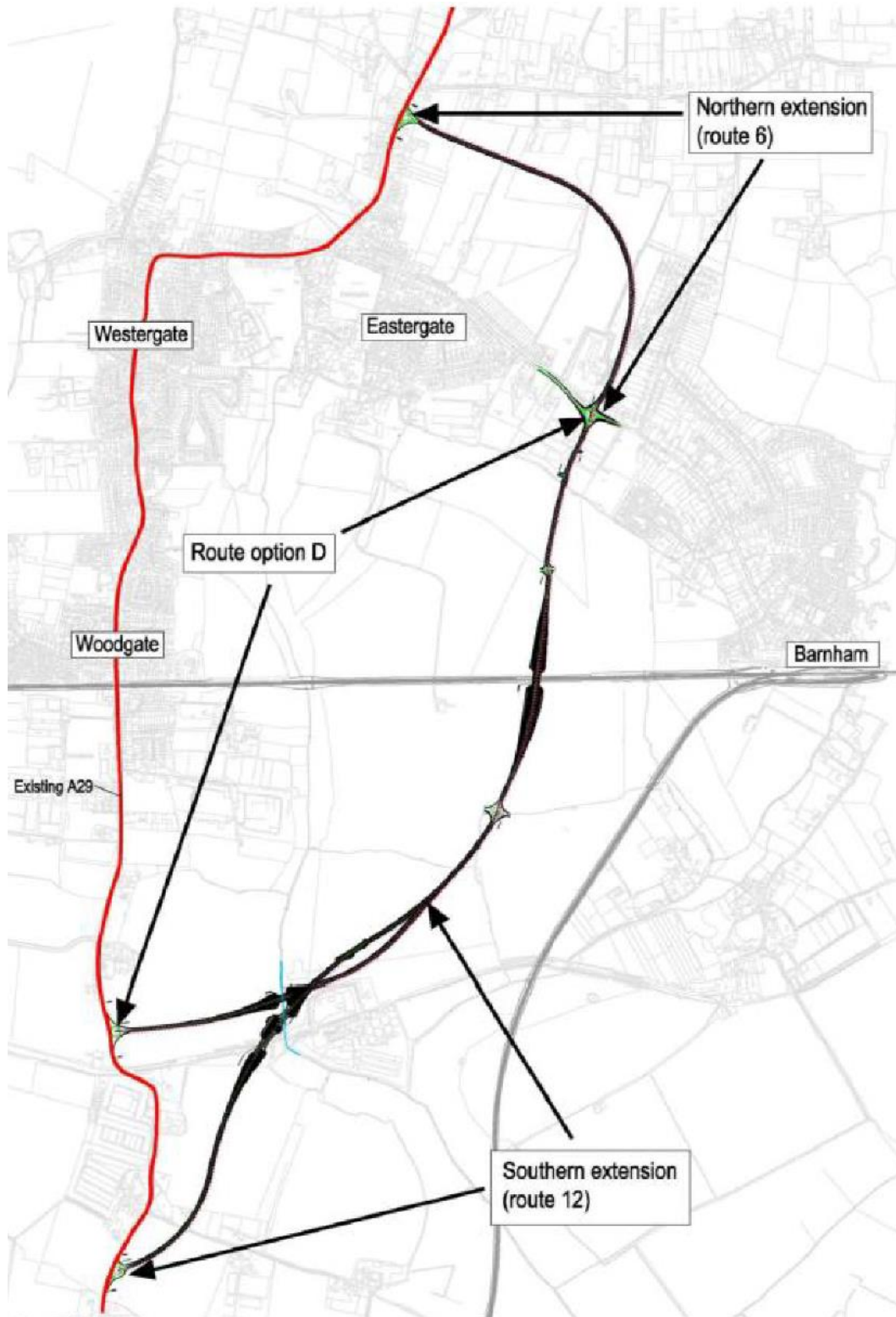
4.3.10. Following a second stage evaluation, the A29 eastern bypass scenario (alignments D8, D and D12) emerged as the preferred route alignment of the A29 Realignment Viability Study. This included consideration of funding from the private sector including Section 106 contributions.

SYSTRA. A29 RE-ALIGNMENT FEASIBILITY STUDY, 2014

4.3.11. In July 2014, SYSTRA Ltd in association with Campbell Reith Hill Ltd and Temple Group were commissioned by Arun District Council to prepare the A29 Realignment Feasibility Study to establish the feasibility, viability and deliverability for a proposed A29 realignment highway scheme.

4.3.12. This study developed a preferred route which considered the findings of the A29 Realignment Viability Study (April 2013) together with northern and southern tie-in extensions. It was acknowledged that the northern section of the route (D8) would have required demolition of many properties and have associated higher costs with its delivery. Route D6 was considered as a more viable option. This lead to the preferred option as shown in **Figure 4-8** below.

Figure 4-8 - Systra. A29 Realignment Feasibility Study, 2014



ARUN DISTRICT COUNCIL AND WEST SUSSEX COUNTY COUNCIL DESIGNS

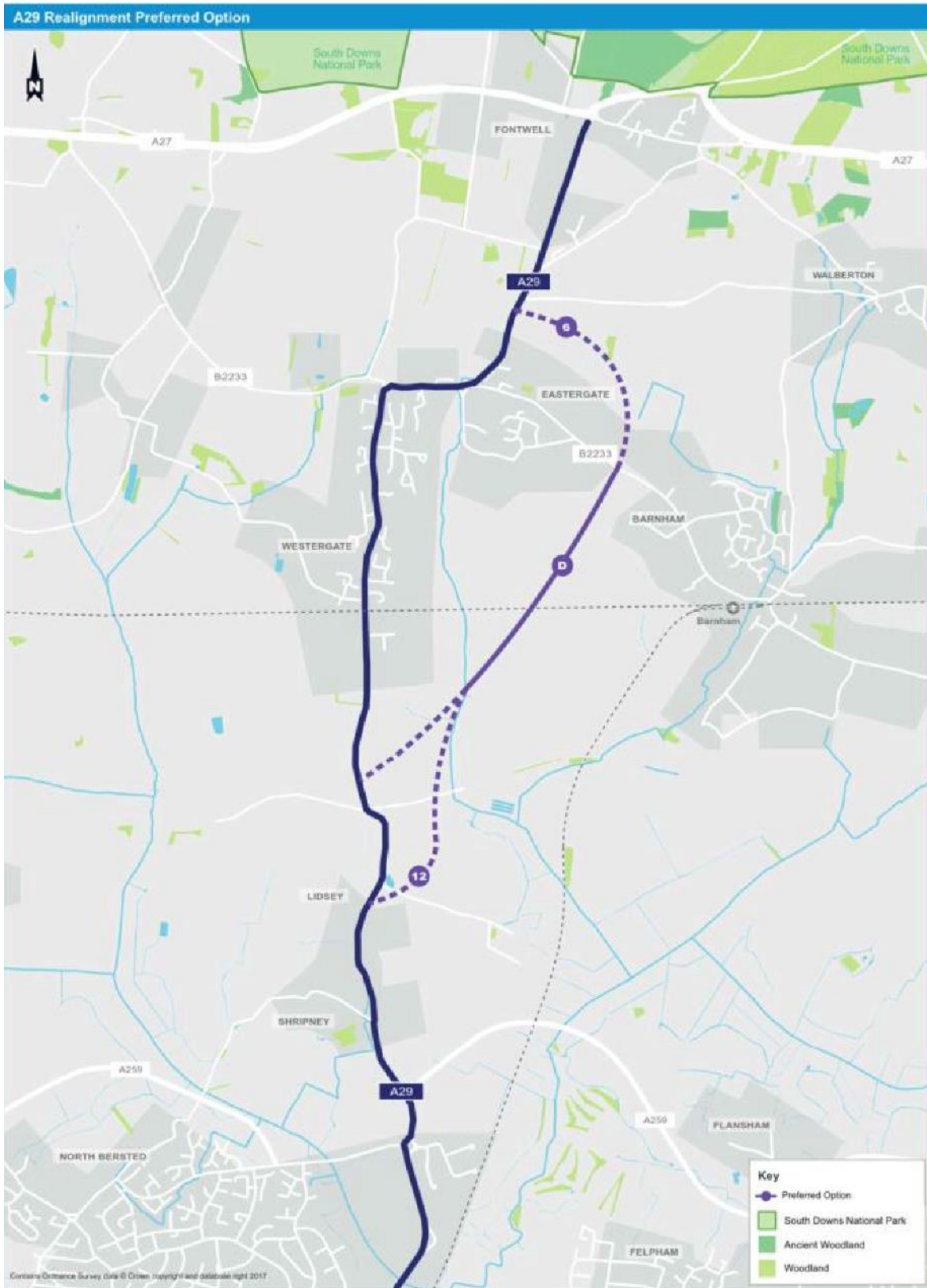
- 4.3.13. Since the last study in 2014, Arun District Council and WSCC continued to work with developers to prepare a Masterplan vision for the area to allow the land to be opened up for housing, schools and other uses.
- 4.3.14. Building upon the 2014 Systra Report, an Option Summary Table was prepared focusing on the pros and cons of the following route options:
- Option 1 – Option 6, D (never considered as a standalone option within any previous study);
 - Option 2 – Option 6, part D (excluding link to the A29 north of Lidsey Bends), 12; and
 - Option 3 – Option 6, full D (tie in to the A29 north of Lidsey Bends -shown as a dotted line), 12 (never considered as an option within any previous study).
- 4.3.15. The routes are shown on **Figure 4-9** and a comparison between the options is outlined in **Table 4-2**.

Table 4-2 - Comparison between preferred options

	Section 6 and Option D	Section 6, Part Option D and Section 12	Section 6, Option D (with extension) and section 12.
Route Length	3.8km	4.34km	Approximately 5.34km
Negatives	<p>Limited housing delivery.</p> <p>Oil extraction and waste treatment site close by.</p> <p>Railway Bridge and watercourse bridges.</p> <p>Flood plain remediation.</p> <p>Noise mitigation to north.</p> <p>Safety benefits reduced as southern tie in doesn't avoid 'Lidsey bends'.</p> <p>Grade I and II agricultural land required.</p>	<p>Oil extraction and waste treatment site close by.</p> <p>Railway Bridge and watercourse bridges.</p> <p>Flood plain remediation.</p> <p>Noise mitigation to north.</p> <p>Terrain near old canal could be challenging.</p> <p>Grade I and II agricultural land required.</p> <p>Section 12 crosses a ProW – additional planning issues if diverted.</p> <p>Ecology – additional hedgerows taken in Section 12 – possible issues with net biodiversity gain/ loss</p>	<p>Oil extraction and waste treatment site close by.</p> <p>Railway Bridge and watercourse bridges</p> <p>Flood plain remediation, additional area required due to additional structure.</p> <p>Noise mitigation to north</p> <p>Terrain near old canal could be challenging.</p> <p>Additional Grade I and Grade II agricultural land compared with alternatives.</p> <p>Additional access point onto A29 will need to be agreed with WSCC highway authority.</p> <p>Parcel of land between D extension and Route 12 might not be visually attractive.</p> <p>Additional conservation land required.</p> <p>Section 12 crosses a ProW – planning issues if diverted.</p> <p>Ecology – additional hedgerows taken in Section 12 – possible</p>

	Section 6 and Option D	Section 6, Part Option D and Section 12	Section 6, Option D (with extension) and section 12.
			issues with net biodiversity gain/ loss.
Benefits	<p>Open up housing delivery but note as much as Option 2.</p> <p>Improved journey time reliability.</p> <p>Improves cycle/ pedestrian facilities.</p>	<p>Opens up housing delivery.</p> <p>Improved journey time reliability.</p> <p>Resolves issue of HGVs negotiating right turn into Fontwell Avenue from Barham Road.</p> <p>Safety benefits increased as southern extension avoids 'Lidsey bends'.</p> <p>Improves cycle/ pedestrian facilities.</p>	<p>Opens up housing delivery but not as much as the other options.</p> <p>Improved journey time reliability.</p> <p>Resolves issues of HGVs negotiating right turn into Fontwell Avenue from Barnham Road.</p> <p>Safety benefits reduces as 1st Route D extension doesn't avoid 'Lidsey Bends'.</p> <p>Having an additional access point onto A29 may raise safety concern from highway authority (WSCC).</p> <p>Improves cycle/ pedestrian facilities.</p>

Figure 4-9 - Preferred Options



- 4.3.16. Key stakeholders were invited to comment on the Options Summary Table either virtually or through attendance at a risk and opportunity workshop held on the 22nd January 2018.
- 4.3.17. Stakeholders whom provided comments included representatives from:
- Police (separate meeting);
 - Historic England (virtually);
 - Natural England (virtually);
 - West Sussex County Council (virtually as well as attendance at workshop);
 - Arun District Council (workshop);
 - Chichester District Council (workshop);
 - Highways England (workshop);
 - Environment Agency (workshop);
 - Angus Energy Plc (workshop);
 - Network Rail (workshop); and
 - Southern consortium (virtually).
- 4.3.18. The outcome of the stakeholder engagement to review the options confirmed that Option 2 (option 6 & D (part) and 12) would provide the best fit with key stakeholders’ objectives for the scheme taking account of known impacts and deliverability issues at that time.
- 4.3.19. Following further traffic modelling, the ability to unlock development parcels and safety considerations, the final scheme was determined to be:
- Option 2 – Route 6 Part D, 12.
- 4.3.20. Option 2 forms Phase 1 (Route 6) (i.e. the Scheme) and Phase 2 (Part D and 12).

4.4. SCHEME DESIGN ALTERNATIVES

ALTERNATIVE NOISE MITIGATION DESIGNS

- 4.4.1. A noise barrier is required to mitigate road noise on the south eastern end of the Scheme. **Table 4-3** outlines the noise barrier designs considered, the preferred option and reasons why other options were not taken forward. The options were presented to local residents in a teleconference on 16th July 2020.

Table 4-3 - Noise mitigation alternatives

Noise barrier type	Description	Reasoning
Earth Bund	An earthworks structure comprising of engineering fill to form a landscaped ‘barrier’ for noise mitigation purposes.	Un-tested sound absorptions properties. Takes up large footprint on site – to achieve the height required for noise mitigation, the footprint doesn’t fit within the site boundary. Requirement for significant imported fill material.

Noise barrier type	Description	Reasoning
Crib Wall	A retaining wall structure to form a cage which is then filled with granular material to provide a barrier for noise mitigation.	<p>Not being a tried and tested acoustic barrier solution - un-tested sound absorption properties.</p> <p>Would require timely laboratory testing.</p> <p>Takes up large footprint on site.</p> <p>Requirement for extensive imported fill material.</p>
Green Wall	A steel frame containing soil as a growing medium. The frame can be planted with a variety of vegetation.	<p>Slow and awkward construction.</p> <p>Labour intensive construction, majority of which carried out by hand.</p> <p>Concerns over settlement, particularly of fill material within cage which can be lost over time, therefore compromising acoustic properties of barrier.</p>
Absorptive Timber Fence	A 3m high timber fence with sections of absorptive material.	<p>Low design life – timber shrinks and cracks causing gaps in the barrier which can seriously affect acoustic and structural performance.</p> <p>Can be damaged by fire, wind, natural elements.</p>
Preferred Option – Acoustic fence	<p>A 3m high fence comprising steel, metal or plastic. Options presented to local residents included:</p> <p>Weathering steel acoustic fence.</p> <p>Painted metal acoustic fence.</p> <p>Plastic 'eco' acoustic fence.</p> <p>For the first two options the panel side facing the road would have small holes within it to reduce reflected noise by allowing it to enter inside of the barrier. The inside is made up of sound absorbing mineral wool to achieve the required noise absorption properties. The plastic fence using recycled PVC for the fence panels with absorptive material within the panels made from recycled plastic bottles.</p>	<p>Excellent reflective and absorptive noise reducing qualities.</p> <p>Minimal maintenance.</p> <p>Quick and easy to construct.</p> <p>40+year lifespan (60+ years for weathered steel fence).</p>

Table 4-4 - Environmental Considerations in the Evolution of the Proposed Design

Technical Topic	Alternative Options Considered
Noise and Vibration	As outlined above, several designs and alternative technologies were considered during the evolution of the Proposed Design. This took into account the available land for construction and location of sensitive receptors including, both current and future residential receptors.
Biodiversity and Landscape and Visual	The Landscape Strategy (Appendix 3.3) has been prepared following a comprehensive suite of landscape and ecological surveys. The Strategy has evolved, taking into account habitat replacement requirements, landscaping and screening requirements, biodiversity metrics and maintenance requirements.

4.5. SUMMARY AND CONCLUSION

4.5.1. The Scheme has been designed following a robust study on alternative corridors, alignments and designs. The design of the Scheme has evolved following baseline environmental studies and design feed-in following initial assessments. Mitigation has been ‘designed-in’ to the Scheme in the form of acoustic fencing and a landscape strategy, which takes into account landscaping and biodiversity mitigation requirements.

4.6. REFERENCES

- Reference 4.1 Town and Country Planning (Environmental Impact Assessment) Regulations 2017, 2017 No. 571.
- Reference 4.2 WSP (2019), A29 - Realignment Transport Business Case
- Reference 4.3 Parsons Brinckerhoff (2020), A29 Woodgate Study;
- Reference 4.4 MVA (2013), A29 Realignment Viability Study
- Reference 4.5 Systra (2014), A29 Realignment Feasibility Study

5. APPROACH TO EIA

5.1. INTRODUCTION

- 5.1.1. This chapter outlines the approach to the EIA, in particular the objectives and overall strategy for the EIA developed by WSP and the wider Project Team. Scoping has been an ongoing process, which is documented within this chapter alongside the evidence base associated with those topics and elements of topics scoped out of the assessment.
- 5.1.2. The approach to consultation is also clearly outlined in this chapter, together with the approach to proportionate assessment including the assessment criteria and the methodology for assessing cumulative effects.
- 5.1.3. The EIA has been undertaken in accordance with the EIA Regulations (Ref. 5.1), the National Planning Practice Guidance (Ref. 5.2), IEMA's EIA Guide to Shaping Quality Development (Ref. 5.3) and IEMA's EIA Guide to Climate Change Resilience and Adaptation (Ref. 5.4). and DMRB Guidance – LA101 – 104 (Ref. 5.5).
- 5.1.4. A detailed overview of the Site's status in relation to relevant planning policy is discussed within the Planning Statement.

OBJECTIVES OF THE EIA

- 5.1.5. The key objectives of the EIA are as follows:
- Set the legal framework;
 - Document the consultation process;
 - Consider the reasonable alternatives to the Scheme;
 - Establish baseline environmental conditions at the Site and within the surrounding area;
 - Identify likely significant effects during the design process so that some effects can be avoided, prevented, reduced or, if possible, offset prior to the assessments within the ES (i.e. demonstrating an iterative approach to EIA);
 - Identify, predict and assess the environmental effects associated with the Scheme: beneficial and adverse; permanent and temporary; direct and indirect and short / medium / long term; significant or not significant;
 - Identify, predict and qualitatively assess the cumulative effects of the Scheme including those associated with the other developments;
 - Identify suitable mitigation measures to avoid, prevent, reduce or, if possible, offset likely significant adverse effects on the environment and identify the likely significant residual effects following the implementation of these measures; and
 - Identify monitoring measures where likely significant residual effects are identified.

5.2. SCREENING (REGULATIONS 5, 6 AND 7) AND SCOPING (REGULATION 15)

SCREENING

- 5.2.1. As set out in Section 1.3 of **Chapter 1: Introduction**, a formal Screening Opinion was not sought from WSCC, however WSCC informally advised that the scheme does require EIA.

SCOPING REPORT

5.2.2. As set out in Section 1.3 of **Chapter 1: Introduction**, a Scoping Report was submitted to WSCC on 2nd April 2019 alongside a preapplication advice request for a formal Scoping Opinion in accordance with the EIA Regulations. As part of WSCC’s responsibility under Regulation 15 of the EIA Regulations, they undertook consultation with relevant statutory stakeholders.

SCOPING OPINION

5.2.3. The EIA Scoping Report (**Appendix 5.1**) outlined that the Scheme has the potential to result in likely significant effects on the environment associated with the following topic areas or elements:

- Air Quality (Chapter 6);
- Noise and Vibration (Chapter 7);
- Traffic and Transport (Chapter 8);
- Ecology and Nature Conservation (Chapter 9);
- Landscape and Visual (Chapter 10);
- Water Resources and Flood Risk (Chapter 11);
- Geology and Soils (Chapter 12);
- Archaeology and Heritage (Chapter 13); and
- Cumulative Effects (Chapter 14).

5.2.4. These topics and their associated likely significant environmental effects have been taken forward and assessed within the ES, with the exception of those topics or topic elements subject to ongoing scoping as described in the following section and summarised in **Table 5.2** below.

5.2.5. The scoping responses received from external consultees are also presented in **Appendix 5.2**. The responses relevant to this ES are summarised in **Table 5-1**, together with an indication of how they have been taken into account during the preparation of the ES. The comments generally follow the structure of the EIA Scoping Report.

Table 5-1 - Summary of the EIA Scoping Opinion and Post Scoping Discussions (Appendix 5.2)

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
WSCC	The ES must provide a full factual description of the development, and consideration of the 'main' or 'significant' environmental effects to which the development is likely to give rise. The ES should, wherever possible avoid the use of jargon and be written in easily-understood language.	This has been provided throughout the ES. Furthermore, the Non-Technical Summary (NTS) (Volume 3) provides a summary of the relevant content and findings of the ES in a clear and concise manner, using non-technical language. The ES is divided into specific topics chapters and this NTS refers to the corresponding chapters of the ES, where the full details of the assessments can be found.
WSCC	Every ES must also contain all of the information set out in Part 2 of Schedule 4 to the EIA Regulations, along with such information from Part 1 as is reasonably required to assess the effects of	A full description of the Scheme provided in Chapter 3: Description of the Scheme.

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
	<p>the project. Regulation 18 states that the ES should contain (in summary), as a minimum:</p> <p>A full description of the development;</p> <p>A description of the likely significant effects of the proposal on the environment;</p> <p>Data to identify and assess the main environmental effects;</p> <p>Measures to avoid/reduce/remedy significant adverse effects;</p> <p>An outline of the reasonable alternatives relevant to the proposed development and its specific characteristics, and reasons for the choice made; and</p> <p>A non-technical summary.</p>	<p>The baseline / assessment data, a description of the potential for likely significant effects, and the recommended mitigation measures are provided within each of the technical chapters (6 – 13).</p> <p>A summary of the alternatives considered is presented in Chapter 4: Consideration of Reasonable Alternatives.</p> <p>The Non-Technical Summary is presented as Volume 3 to this ES.</p>
WSSC	<p>As set out in Part 1 of Schedule 4, the ES should include, as relevant, a description of the aspects of the environment likely to be significantly affected by the development, as confirmed in the following; a description of the likely significant effects on the environment resulting from the development and the methodology used to predict them; and a description of proposed mitigation measures.</p>	<p>Chapter 5 – Approach to EIA and technical chapters (6 – 13).</p>
WSSC	<p>The general approach to assessment set out in sections 2.3 – 2.13 of the Scoping Request is considered acceptable. I would, however, highlight the importance of being clear about considering the impact of the scheme in cumulation with Phase 2 of the A29 realignment in particular, as well as the nearby housing developments.</p>	<p>Chapter 5 – Approach to EIA Chapter 14 - Cumulative Effects</p>
WSSC	<p>The potential impacts on housing to be located south of the road, as allocated in the Arun Local Plan (2018), should be considered and where appropriate, mitigation provided.</p> <p>The physical scope of the mitigation works (e.g. acoustic fence, SUDs schemes, clearance works to provide visibility splays, and off-site mitigation works to make the development acceptable) should be made clear on the submitted plans so that the impact of these can be considered as part of the Scheme.</p>	<p>Impacts on nearby residents is considered in Chapter 6 – Air Quality, Chapter 7 – Noise and Vibration and Chapter 10 – Landscape and Visual.</p> <p>A full scheme description is provided in Chapter 3 - Description of the Scheme and a set of scheme plans is provided in Appendix 3.1.</p>
WSSC	<p>As identified in the Scoping Request, the Landscape and Visual Impact chapter should be informed by a Landscape and Visual Impact Assessment (LVIA) undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment (GLVIA) (3rd Edition) (The Landscape</p>	<p>Chapter 10 – Landscape and Visual</p>

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
	Institute and Institute of Environmental Management and Assessment (GLVIA), 2013), along with the DMRB Interim Advice Note 135/10.	
WSCC	It is recommended that location of the viewpoints identified in Table 4-2 of the Scoping Request are agreed with planning officers prior to the assessment being undertaken. No viewpoint mapping was provided so it will be important to agree these. Notably, from the information provided it is unclear how impacts on existing and future residents to the west (on Fontwell Avenue/Collins Close, and as a result of the new junction on the A29) would be considered.	Chapter 10 – Landscape and Visual The landscape viewpoints were confirmed and agreed with the planning officer on 20/02/2020.
WSCC	The impact on future residential in the allocated area to the south should be considered in detail (and mitigation provided if necessary) [with regards to Landscape and Visual].	Chapter 10 – Landscape and Visual
WSCC	The submission should include an accurate zone of theoretical visibility used to highlight potential viewpoint locations and to define the study area which is likely to be affected. Viewpoints should be agreed with WSCC Officers before assessment commences. The assessment of landscape/visual impact should include consideration of mitigation measures such as acoustic fencing, drainage schemes, and the loss of existing planting.	Chapter 10 – Landscape and Visual
WSCC	The impact of road lighting should also be considered, particularly as the eastern part of the site is an area identified in the Arun Local Plan as a ‘Green Infrastructure Corridor’ and therefore requiring protection ‘from the negative effects of light in development’ (policy GI SP1).	Chapter 10 – Landscape and Visual
WSCC	A comprehensive landscaping scheme should be submitted, including details of how landscaping will be maintained once the road is operational.	Chapter 10 – Landscape and Visual Appendix 3.3 Landscape Strategy
WSCC	<p>The approach to considering arboricultural impact is considered sufficient, but I would highlight the response of the WSCC Arboriculturalist regarding the disposal of trees removed from the site, encouraging the creation of habitat piles/hibernacula rather than burning as biomass.</p> <p>I would also highlight the need to be clear about the loss of trees due to visibility splays for both the construction (i.e. construction access) and operational phases, and in relation to other mitigation measures such as the provision of drainage ponds and culverts.</p>	Chapter 10 – Landscape and Visual Appendix 3.4 – Arboricultural Report

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
WSCC	Harvest mice (as per the WSCC Ecologist's response) should be scoped into consideration in the EIA	Chapter 9 – Ecology and Nature Conservation
WSCC	Direct and indirect impacts on ecology should be considered for both the construction and operational periods, including the potential for impacts upon ecology resulting from noise, lighting and air/land/water quality. Mitigation measures should be clearly identified in the assessment, as well as in the submitted plans so that the impacts (positive and negative) can be assessed in relation to both ecology and other topics.	Chapter 9 – Ecology and Nature Conservation
WSCC	In accordance with the NPPF, the ES should give consideration to both the preservation and enhancement of biodiversity and demonstrate the opportunities that have been considered for enhancement.	Chapter 9 – Ecology and Nature Conservation
WSCC	The proposed road would be in close proximity to existing noise-sensitive residential and commercial properties, including those at Murrell Gardens, the B2233, the A29 and the Fordingbridge Industrial Estate. The impact of the development on these, as well as future occupants must be fully assessed.	Chapter 7 – Noise and Vibration
WSCC	As noted by Arun District Council's Environmental Health Officer, a comprehensive assessment of noise and vibration impacts must be undertaken by a competent sound consultant, and any mitigation measures required must be clearly set out in the submitted information. Sensitive receptors should be agreed with Arun District Council's Environmental Health team before surveys are undertaken.	Chapter 7 – Noise and Vibration
WSCC	Consideration should be given to the potential impacts of noise upon neighbouring land uses such as businesses and public rights of way. The noise/vibration impact on future occupants of housing to be located south of the proposed road, and beyond Barnham Road to the south must be taken into account in the assessment.	Chapter 7 – Noise and Vibration
WSCC	The potential for noise impact from construction compounds and access roads should be considered in the assessment of noise.	Chapter 7 – Noise and Vibration
WSCC	The assessment should take into account the guidance set out in the National Planning Policy	Chapter 7 – Noise and Vibration

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
	Framework and the World Health Organisation Community Noise Guidelines.	
WSCC	If the noise assessment confirms that physical noise mitigation measures such as fences or bunding are required, these must be included in the scheme design so that their impact on other environmental factors such as landscape and flooding can be considered through the EIA.	See scheme plans provided in Appendix 3.1, Chapter 3 – Description of the Scheme and Chapter 7 – Noise and Vibration
WSCC	Given the proximity of residential and commercial properties to the site, 'increased dust deposition and soiling rates', it is considered this should be scoped into consideration through the EIA.	Chapter 6 - Air Quality
WSCC	Sensitive receptors should be agreed with Arun District Council's Environmental Health Officers before any surveys or assessments are undertaken. The assessment should take into account both Arun DC's requirements and guidance set out in the National Planning Policy Framework.	Chapter 6 - Air Quality
WSCC	The impact of the air quality of future residents of housing allocated to the south of the road must be assessed.	Chapter 6 - Air Quality
WSCC	The developments to be considered for the purposes of traffic modelling (Table 8-1) are broader than those which need to be considered in relation to other cumulative impacts, or the potential for cumulative impact should be clearly ranked. It is unclear what 'in proximity' has been taken to mean in relation to this table, but some of the development are a significant distance from the site.	Chapter 14 – Cumulative Effects
	Paragraph 8.2.1 notes that the study area would be identified for each topic but this has not been clarified in this chapter relating to the overall approach, so it is unclear how the assessment would be carried out.	Chapter 14 – Cumulative Effects
WSCC	For the purposes of realistically and usefully considering the cumulative impact of the proposed development, the cumulative impact chapter should focus on existing/approved/allocated development within the allocations north and south of the application site, including phase 2 of the A29, along with this proposal. It is considered that these will form the main cumulative impacts resulting from the project.	Chapter 14 – Cumulative Effects

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
WSSC/ADC	The Arun District Council response to the Scoping Request in relation to cumulative impacts should be taken into account.	Chapter 14 – Cumulative Effects
WSSC	The impact on built heritage assets, both negative and positive (i.e. fewer vehicles travelling past/close to listed buildings/conservation areas) should also be clarified.	Chapter 13 – Archaeological and Heritage
WSSC	<p>The DBA will clarify the extent of work required, but it should include an adequate geo-archaeological desk-based assessment, making use of a recent report on geo-archaeologists' monitoring of part of the site (see WSSC Archaeologist's response to the Scoping Request).</p> <p>Appropriate and proportionate proposals for mitigation of anticipated adverse impacts of development upon heritage assets, below and above ground, should be identified.</p>	Chapter 13 – Archaeological and Heritage
WSSC	The scope of archaeological investigation should not be limited to designated sites and listed buildings, whether designated or undesignated, including landscapes of historical, cultural or archaeological significance. This requirement is set out in the National Planning Policy Framework (NPPF) paragraph 184.	Chapter 13 – Archaeological and Heritage
WSSC	The Phase 1 Contaminated Land Assessment should include consideration of existing and historical land uses (including enquiries with the LPAs and Environment Agency, as well as historical mapping); the sensitivity of the site (with reference to hydrogeology, ecological features, proximity of watercourses, neighbouring land uses, and geology); development of a conceptual site model, following analysis of environmental risks via the source-pathway-receptor approach; and identification of suitable mitigation measures to minimise any significant risks.	Chapter 12 – Geology and Soils
WSSC	The ES chapter should also include consideration of the impact of the loss of agricultural land (in DMRB terms – land use), and consideration of the potential impact on an area safeguarded in the West Sussex Joint Minerals Local Plan (2018) for its sand and gravel resource.	<p>Due to the size of the Scheme and the future plans for the surrounding area (urban development), the impacts on agricultural land have been scoped out of the assessment.</p> <p>Consideration of potential impact on the safeguarded area in the West Sussex Joint Minerals Local Plan (2018) is considered in the Minerals Safeguarding Statement submitted</p>

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
		with the Planning Application documents.
WSCC	A Flood Risk Assessment is required because the site is more than 1 hectare in area. This should feed into the ES. The potential impact of the development on ground and surface water quality and quantities (i.e. flood risk) should be considered and objectively assessed. Measures to protect ground and surface water should be set out, including an outline of surface water drainage proposals, and taking into account the impact this may have on drainage and flood risk. All drainage proposals should be based on sustainable principles (SUDs).	Chapter 11 - Water Resources and Flood Risk Appendix 11.1 – Flood Risk Assessment (including Surface Water Drainage Strategy).
WSCC	The Traffic and Transport chapter should be informed by the Transport Assessment which should also consider the Department for Transport’s Guidance (2007), with the full scope agreed with WSCC Highways at an early stage It should use the most up-to-date figures and be informed by a non-motorised user survey.	Chapter 8 – Transport and Access Appendix 8.1 – Transport Assessment
WSCC	The Traffic and Transport section of the ES should also refer to any proposed street lighting, speed limit, traffic signals, visibility splays, road signing, road lining, and connection with existing roads and Phase 2 of the A29.	Chapter 8 – Transport and Access
WSCC	A Road Safety Audit (including designer’s response) will also be required.	The Road Safety Audit and Designers response is submitted with the Planning Application documents.
WSCC	The [Traffic and Transport] assessment should give consideration to the potential for wider impacts upon the Strategic Road Network in terms of safety and capacity, and the potential for positive impacts in terms of providing cycle/foot-paths and connections to the wider network of cycle paths. The linkages to the cycle/foot-paths beyond the site should be made clear in the submission.	Chapter 8 – Transport and Access
WSCC	The implications of the new road on the public right of way which crosses through the site, and the wider public right of way network should be considered in the EIA where relevant (and this should be discussed at an early opportunity with WSCC’s PRoW Officers).	Chapter 8 – Transport and Access
WSCC	An appraisal of the potential interaction of impacts should also be set out either in this character or in	Chapter 5 – Approach to EIA

Consultee	Comments Provided in the Scoping Response	How This Has Been Taken into Consideration in the ES
	each topic chapter, acknowledging the potential for a combination of impacts to result in an impact of greater significance.	
WSCC	Each chapter in the EIA should include consideration of Schedule 4(5) to the EIA Regulations relating to the likely significant effects of the project on the environment resulting from matters such as the use of natural resources, risks to human health, and the vulnerability of the project to climate change.	Chapter 5 – Approach to EIA and technical chapters (6-13)

ONGOING SCOPING

- 5.2.6. As EIA is an iterative process taking place alongside the design of the Scheme, the process of scoping the assessment has been ongoing.
- 5.2.7. Following receipt of the formal Scoping Opinion, on the 3rd May 2019 a meeting was held with the WSCC Planner on 9th May 2019, to discuss details, including a strategy to keep the scope of the EIA proportionate. Email correspondence was sent to WSCC on 25th March 2020 documenting those discussions. In this correspondence a request was made to remove the following chapters from the EIA as there are unlikely to be significant effects in these areas subject to the results of the baseline surveys:
- Archaeology and heritage; and
 - Geology and soils.
- 5.2.8. It was noted that these topics would be covered in standalone technical reports submitted in support of the planning application. A response to the request to remove these chapters was received on 25th March 2020, which stated that these topics should be included within the ES, even if initial surveys have confirmed there would be no significant effect. The information in the relevant chapter presenting that conclusion. These topics are included as **Chapter 12: Geology and Soils** and **Chapter 13: Archaeology and Heritage**.

TOPICS SCOPED INTO THE ASSESSMENT

- 5.2.9. Following receipt of the Scoping Opinion, consultation and ongoing scoping, the topics and topic elements scoped into the EIA are set out in **Table 5.2** below.

Table 5-2 - Topics and elements scoped into the assessment

Topic	Elements scoped into the assessment
Air Quality	Construction dust, machinery and vehicle emissions Operational road traffic emissions
Noise and Vibration	Disturbance to sensitive receptors from the generation of noise and vibration from on-site activities during the construction phase of the Scheme.

Topic	Elements scoped into the assessment
	<p>Disturbance to noise sensitive receptors from noise generated by road traffic on the Scheme;</p> <p>Disturbance to noise sensitive receptors from noise level changes generated by a combination of changes in road traffic flow and / or composition on existing roads as a result of the Scheme; and</p> <p>Disturbance to noise sensitive receptors from noise generated by the relocated substation</p>
Transport and Access	<p>Construction Traffic</p> <p>Construction impacts on Public Rights of Way</p> <p>Operational road safety</p> <p>Change in Traffic Flows</p>
Ecology and Nature Conservation	<p>Permanent and temporary land-take within the footprint of the Scheme.</p> <p>Permanent manipulation of habitats such as landscaping.</p> <p>Temporary storage of construction materials within / adjacent to ecological resources with associated habitat contamination and compaction.</p> <p>Habitat loss and fragmentation disrupting connectivity, species movement and dispersal, causing expenditure of extra energy and genetic isolation.</p> <p>Direct injury/mortality during site clearance and construction.</p> <p>Disturbance from construction activities including visual, noise, vibration and lighting.</p> <p>Degradation through airborne pollution.</p> <p>Pollution caused by use of hazardous materials and incidental release of dust, chemicals, fuels or waste materials.</p> <p>Direct mortality during operational use.</p> <p>Displacement, species loss and isolation.</p> <p>Habitat fragmentation disrupting connectivity, species movement and dispersal, causing expenditure of extra energy and genetic isolation.</p> <p>Direct disturbance from operational use visual, noise, vibration and lighting.</p> <p>Degradation through airborne and waterborne pollution.</p>
Landscape and Visual	<p>Visual and landscape effects during construction</p> <p>Visual and landscape effects during operation.</p>
Water Resources and Flood Risk	<p>Short-term increase in flood risk due to construction activities;</p> <p>Potential effects on the water quality of surface water and groundwater resources due to construction activities or accidental leaks and spillages;</p>

Topic	Elements scoped into the assessment
	<p>Potential increase in physical contamination (i.e. sedimentation) of surface water bodies due to ground disturbance.</p> <p>Potential increase in on and off-site flood risk, due to an increase in impermeable surface areas, interception of overland surface water flows and the disturbance of groundwater flow paths;</p> <p>Potential effects on the water quality of water resources associated with routine runoff and spillage, including watercourses and groundwater. This effect includes both potential chemical and physical contamination).</p>
Geology and Soils	<p>Pre-existing contamination</p> <p>Contamination occurring as a result of the operation of the Scheme.</p> <p>Commentary on Agricultural Land and Mineral Safeguarding (see Table 5-3).</p>
Archaeology and Heritage	<p>Loss of prehistoric remains during construction.</p> <p>Loss of roman remains during construction.</p>

TOPICS SCOPED OUT OF THE ASSESSMENT

- 5.2.10. As part of ongoing scoping, a number of topics or elements have been scoped out of the EIA and are therefore not reported in the ES. **Table 5-3** summarises this aspect of the process and the justification for scoping out these topics/elements.

Table 5-3 - Topics and elements scoped out of the assessment

Topic/element scoped out	Justification
Population and health/socio-economic impact	The ES assesses the potential effect of the Scheme on the environment and human health, including through emissions to air and water, and through noise. The Scheme would not otherwise result in significant demographic changes or otherwise affect large populations, so it is not considered that there is a need to separately consider impacts on population and health in the ES.
Geology and Soils – Agricultural Land Classification and Mineral Safeguarding	<p>A worst case of Grade 1 agricultural land can be assumed and weighed up in the planning decision without being informed by further assessment.</p> <p>The principal of the loss of this land to the Scheme has therefore already been accepted in the adopted local development and transport plans. Its loss is appropriately accounted for in the sustainability appraisal of the local plans, rather than at project level. This is set out in the Planning Statement.</p> <p>The area is safeguarded for soil and gravel in the West Sussex Joint Minerals Local Plan (2018) (Ref. 5.6.). A Minerals Safeguarding Statement is included within the Planning Statement and therefore a separate ES chapter is not required.</p>
Climate	It was agreed that the impact of climate change (and resilience to it) could be covered in relation to topic chapters, particularly flood risk, and that the impact resulting from the Scheme on climate change

Topic/element scoped out	Justification
	<p>would not result in significant effects. Therefore this topic has been be scoped out.</p> <p>A review has been undertaken regarding the likely effects deriving from the vulnerability of the Scheme to risks of major accidents and disasters. An initial list of major accidents and disasters has been compiled using a variety of sources including the Cabinet Office National Risk Register of Civil Emergencies 2015 Edition (Ref. 5.7) and UK Government Emergency Response and Recovery Guidance (Ref. 5.8.). This list has been screened in two stages to identify risks which would be applicable to the Scheme: firstly based on the location and use/nature of the Scheme; and secondly based on the likelihood of the event and consequence of the outcome. This review did not identify likely significant effects from major accidents or disasters that would require assessment under the EIA Regulations and therefore this topic is no longer considered in this ES.</p>
Material and waste	It is agreed that there would not be significant effects in relation to the use of materials and creation of waste, and that this can be covered through other chapters, and through a Construction Environmental Management Plan which is included as Appendix 3.4.
Risk of Major Accidents/Disaster	It is not considered that there is a high probability of major accidents resulting from the Scheme, and certainly not so significant as to warrant inclusion in the EIA.
Heat and Radiation	It is not considered the project would result in significant heat/radiation impacts. This has therefore been scoped out of consideration. The Scheme is also expected to decrease the potential for accidents from the existing scenario

5.3. CONSULTATION

- 5.3.1. In addition to the formal consultation undertaken in conjunction with the scoping process, technical and public consultation has been undertaken as described below.

TECHNICAL CONSULTATION

- 5.3.2. As part of the EIA process technical consultation with a range of statutory and non-statutory consultees has been ongoing. Details of the technical consultation undertaken for each topic area is provided in the respective Chapters.

PUBLIC CONSULTATION

- 5.3.3. West Sussex County Council held a full public consultation for the A29 Realignment (Phases 1 and 2) in conjunction with the developers, over a period of more than 8 weeks from 26 February to 26 April 2019.
- 5.3.4. The Consultation Findings Report has now been published at this link:
<https://haveyoursay.westsussex.gov.uk/highways-and-transport/a29realignment/>
- 5.3.5. The Cabinet Member's proposed decision about the A29 Realignment Scheme was called-in by the Environment, Communities and Fire Select Committee on 13 March 2019.

- 5.3.6. In response, the Cabinet Member confirmed that comments received during the consultation would be taken into account before the scheme design was finalised. No substantive changes have been required to Phase 1 of the scheme, however the preliminary design has considered all comments.
- 5.3.7. Further engagement with stakeholders has also taken place on more localised issues. On 16 July 2020 WSCC held a meeting with localised residents to discuss the noise mitigation for the scheme.

5.4. APPROACH TO THE ASSESSMENT OF THE SCHEME

- 5.4.1. This section outlines the phases of the Scheme that have been assessed, together with the approach to the baseline conditions, future baseline conditions, cumulative effects and design tolerances. It also sets out the overarching approach to the EIA, together with project specific requirements for the assessment of effects.
- 5.4.2. The Scheme has been assessed against the description, design principles and tolerances and supporting plans as detailed in **Chapter 3: Description of the Scheme**. The maximum extent of the planning application boundary and building footprint / height has been assessed as the worst-case situation. There is therefore some degree of flexibility to allow the Scheme to evolve (i.e. reduce in size) if necessary.
- 5.4.3. In order to avoid duplication of assessment, assumptions have been made in relation to measures to be implemented under existing or pending consents.

BASELINE SCENARIO

- 5.4.4. Baseline information (the existing environmental characteristics and conditions of the Site and surrounding area) has been collated, based upon surveys undertaken and desk based information available at the time of the assessment. Technical chapters 6 – 13 provide details of the baseline information and a summary is provided in **Chapter 2: The Existing Site**. Any limitations establishing the baseline are described in technical chapters 6 – 13.
- 5.4.5. There are slight variances across the ES depending on the use of existing data obtained through other sources and the dates when surveys were undertaken, which represent baseline scenarios earlier or later than 2020. This has been clearly outlined within technical chapters 6 – 13.
- 5.4.6. The dates of surveys and the dates when data sources have been accessed are provided within technical chapters 6 – 13.

FUTURE BASELINE

- 5.4.7. The assessment has also taken into consideration how the current baseline conditions may change in the future without the presence of the Scheme, known as the 'future baseline'. The future baseline scenario is summarised in Chapter 2: The Existing Site and technical chapters 6-13.
- 5.4.8. Due to the limitations, necessary assumptions and lack of evidence associated with the future baseline (i.e. it cannot be accurately measured), a detailed consideration of the effects of the Scheme against the future baseline would generally not result in a robust assessment. However, consideration has been given, in descriptive terms, within each topic chapter to likely significant effects arising in relation to the future baseline.
- 5.4.9. For some topics, such as Chapter 6 – Air Quality, Chapter 7 – Noise and Chapter and Chapter 8 – Transport and Access, projections are a required part of the methodology. These include:
- 2017 base year;

- 2023 – do minimum (comparable to Future Baseline);
- 2023 – Phase 1 (with the Scheme);
- 2023 – Phase 1 + 2 (the wider project);
- 2038 – do minimum (comparable to Future Baseline);
- 2038 – Phase 1 (with the Scheme); and
- 2038 – Phase 1 + 2 (the wider project).

5.4.10. The key changes to the surrounding area in the Future Baseline scenario will be as a result of the adjacent Barratt's scheme and Phase 2 of the A29 Realignment project (which includes a mix of road infrastructure and mixed-use development).

A29 Realignment Phase 2

5.4.11. The A29 upgrade will be delivered in two phases. The Scheme relates to Phase 1 (North) and is the primary focus of this ES and EIA. The Scheme to be delivered by WSCC is the northern section from the A29 Fontwell Avenue, south of Eastergate Lane, to a new junction with Barnham Road, as described in Chapter 3: Description of Scheme.

5.4.12. Phase 2 of the A29 Realignment project comprises a combination of road infrastructure and a mixed-use urban extension. Phase 2 will link to Phase 1 (the Scheme) at Barnham Road and will cross the West Coast Mainline and then connect with Lidsey Road near Lidsey. The urban extension is still at the masterplan stage but is anticipated to include new residential development, a primary school, a secondary school, a mixed-use centre, open space and habitat areas. Phase 2 is expected to be constructed fully within 16 years and will be complete in 2036.

Adjacent Proposed Scheme

5.4.13. The Barratts David Wilson Homes development, which is located to the south and west of the Scheme, is expected to comprise up to 500 homes. Construction works are anticipated to begin in 2022 and be completed by 2027. The access to the development will be from Barnham Road, in the south and Fontwell Avenue in the north. The proposed land uses include residential development, a care home, informal open space, planting, a sustainable drainage system and a wildlife corridor. The proposed development would introduce a significant number of additional buildings within the landscape and further separate the Scheme from the residential properties on Barnham Road, Collins Close, and Fontwell Avenue. The development would also alter the landscape character of the area increasing the urban setting of Eastergate and reducing the valuable gaps between settlements.

CLIMATE CHANGE

5.4.14. Where relevant, the effect of climate change has been considered within the assessment. This is of particular relevance for **Chapter 11: Water Resources and Flood Risk**.

PHASES OF THE SCHEME

5.4.15. Consideration has been given to demolition activities and the construction and operation of the Scheme, which is assumed to be implemented over a 3-year period as described in **Chapter 3: Description of the Scheme**.

ASSESSMENT CRITERIA

- 5.4.16. The classification of each effect identified has been assessed based on the magnitude of change (or impact) due to the Scheme and the sensitivity/value of the affected receptor to change, as well as a number of other factors that are outlined in more detail below. The classification of residual effects has been assessed with regard to the extent to which secondary mitigation measures will avoid, prevent, reduce or, if possible, offset adverse effects or enhance beneficial effects.
- 5.4.17. The assessment of likely effects for each of the technical topics are presented in technical chapters 6 – 13 and have taken into account a number of criteria to determine whether or not the likely effects are significant in terms of the EIA Regulations. Wherever possible and appropriate, the effects have been assessed quantitatively. The following criteria have been taken into account when classifying the likely effects:
- Relevant legislation and planning policy;
 - International, national, regional and local standards;
 - Likelihood of occurrence of the effect;
 - Geographical extent of effect;
 - Sensitivity and/or value of the receptor;
 - Magnitude and complexity of effect;
 - Whether the effect is temporary or permanent;
 - Duration (short, medium or long-term), frequency and reversibility of effect;
 - Whether the effect is direct or indirect, secondary or transboundary;
 - Inter-relationship between different effects (both cumulatively and in terms of likely effect interactions); and
 - The outcomes of consultations.

SENSITIVITY/VALUE OF RECEPTORS

- 5.4.18. The sensitive receptors considered within the ES are identified within technical chapters 6 – 13. The sensitivity of these receptors to change is also defined within technical chapters 6 – 13 and has been determined where available and appropriate by quantifiable data, the consideration of existing designations and professional judgement. The categories used to classify the sensitivity of receptors (very high, high, medium, low, and negligible), unless otherwise stated, are shown in **Table 5-4**. Where topic specific methodology deviates from this approach, for example as a result of following topic specific guidance, this is set out in the methodology section of the technical chapter.

MAGNITUDE OF IMPACT

- 5.4.19. The magnitude of impact for each identified effect is predicted as a deviation/change from the established baseline conditions, as a result of the Scheme. The magnitude of these impacts are also defined within technical chapters 6 – 13 and has been determined where available and appropriate by quantifiable data, available appropriate national and international standards or limits (World Health Organisation (WHO) Limits, European Union (EU) Quality Standards, etc.) and professional judgement. The scale used (large, medium, small, negligible and no change), unless otherwise stated, is shown in **Table 5-4**.
- 5.4.20. The magnitude of impact identified is based on the peak potential magnitude of change, i.e. the greatest likely magnitude of impact that may be experienced by a sensitive receptor (existing or proposed).

CLASSIFYING EFFECTS

5.4.21. The classification of effects has been undertaken using professional judgements (assumptions and value systems) that underpin the attribution of significance. Each effect has been assessed against Significance Criteria as shown in **Table 5-4**, unless otherwise stated, based on the receptor sensitivity and the magnitude of the impact as a result of the Scheme.

Table 5-4 - Significance Criteria

	Magnitude of impact (degree of change)					
Environmental value (sensitivity)		No change	Negligible	Small	Medium	Large
	High	Negligible	Minor	Moderate	Major	Major
	Medium	Negligible	Minor	Minor or Moderate	Moderate	Major
	Low	Negligible	Negligible or Minor	Minor	Moderate	Moderate
	Negligible	Negligible	Negligible or Minor	Neutral or Slight	Slight	Minor or Moderate

5.4.22. The terms as used within **Table 5-4** have been defined below, applying to both beneficial and adverse effects:

- **Major effect:** where the Scheme could be expected to have a substantial improvement or deterioration on receptors;
- **Moderate effect:** where the Scheme could be expected to have a noticeable improvement or deterioration on receptors;
- **Minor effect:** where the Scheme could be expected to result in a perceptible improvement or deterioration on receptors; and
- **Negligible:** where no discernible improvement or deterioration is expected as a result of the Scheme on receptors, including instances where no change is confirmed.

5.4.23. Unless otherwise stated in the technical chapters of this ES, effects that are classified as **moderate** or above are considered to be **significant**. Effects classified as minor or below are considered to be **not significant**.

5.4.24. Where topic specific methodology deviates from this approach, for example as a result of following topic specific guidance, this is set out in the methodology section of the technical chapter. Tables summarising the likely significant effects associated with each technical topic area, required mitigation measures and residual effects are provided at the end of each technical chapter. The tables provide a clear distinction of the type of effect:

- Beneficial or adverse;
- Permanent or temporary;
- Direct or indirect;
- Short, medium or long-term;
- Secondary, cumulative or transboundary; and
- Significant or not significant.

- 5.4.25. In terms of the duration of an effect, short-term has been considered as 1 year or below (at points during the construction phase), a medium-term effect has been considered to be between 2 and 5 years in duration and a long-term effect has been considered to be greater than 6 years in duration. Any variation to these definitions arising for example from differences in topic methodology or guidance is explained in technical chapters 6 – 13.

DESIGN AND ENVIRONMENTAL INTERFACE

- 5.4.26. Through the EIA process, primary mitigation has fed into the design of the Scheme. These key topic areas which have influenced the design of the Scheme are: **Chapter 7 - Noise and Vibration**, **Chapter 9 - Ecology and Nature Conservation** and **Chapter 10 - Landscape and Visual**. These aspects are included in the Preliminary Design Plans (**Appendix 3.1**) and Landscape Strategy (**Appendix 3.3**).

MITIGATION AND MONITORING

- 5.4.27. Primary mitigation is mitigation that forms part of the Scheme itself. These measures include items specified in the preliminary design to mitigate adverse effects. Examples of primary mitigation include landscape plans, noise barriers and attenuation basins.
- 5.4.28. Secondary mitigation describes actions that will require further activity in order to achieve the anticipated outcome. Examples include additional items to include in the detailed design, for example to comply with proposed lighting limits or developing a travel plan for the Scheme. Secondary mitigation also includes construction phase plans to mitigate (reduce) construction phase impacts.
- 5.4.29. Where likely significant adverse effects have been identified in the assessment, measures to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment are described. Monitoring is required where there are significant adverse residual effects. In some cases, for instance where there is uncertainty of residual effects remain, it may also be appropriate to implement monitoring.
- 5.4.30. Proposed secondary mitigation and monitoring measures are set out within technical chapters where necessary. **Chapter 3: Description of the Scheme** sets out the primary mitigation required as part of the Scheme. The mechanism by which the measures are to be secured and implemented and the party responsible for their delivery is also recorded.

5.5. CUMULATIVE EFFECTS

- 5.5.1. Schedule 4, Paragraph 5(e) of the EIA Regulations states that the ES should include a description of the likely significant effects of the development on the environment resulting from:

‘the cumulation of effect with other existing and / or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.’

- 5.5.2. Sub-paragraph 4, 2 (e) refers to the need to assess:

‘the interaction between the factors referred to in sub-paragraphs (a) to (d) [where these sub-paragraphs refer to topic-specific factors].’

- 5.5.3. There is no widely accepted methodology or best practice for assessing cumulative effects although various guidance documents exist. The following approach has been adopted for the assessment of

cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the Scheme, the other developments under consideration and the information available to inform the assessment. The approach was outlined in the EIA Scoping Report (**Appendix 5.1**) and through discussion with WSCC.. The assessment of cumulative effects is presented in technical chapters 6-13 and **Chapter 14: Cumulative Effects**.

- 5.5.4. Effect interactions, or intra-project effects, are the combined or synergistic effects caused by the combination of effects of the Scheme on a particular receptor which may collectively cause a greater effect than individually. In-combination, or inter-project effects are the combined effects of the Scheme on a common receptor together with other developments.
- 5.5.5. Further details regarding the scope and methodology of the assessment of cumulative effects, the identification of relevant committed developments and a description of those included within the assessment are provided in **Chapter 14: Cumulative Effects**.
- 5.5.6. Through analysis of Arun District Council (ADC) online planning portal (Ref. 5.9), a number of other developments have been identified and are considered within this ES. These are presented in **Table 5-5**. Agreement upon these other developments has been sought and received from ADC.

Table 5-5 - Other Developments

Planning Ref	Address	Date Valid	Status	Proposal
WA/44/17/OUT & WA/95/18/RES	Land east of Tye Lane Walberton, 1.8 km north-east	February 2018	Approved	Outline application with some matters reserved for up to 175 dwellings new vehicular access, together with associated car parking, landscaping and community facilities to include allotments, play space and community facilities to include allotments, play space and community orchard. This application is a departure from the Development Plan and may affect the character and appearance of the Walberton Village Conservation Area at Land east of Tye Land Walberton.
WA/22/15/OUT	Land to the East of Fontwell Avenue Fontwell, 0.6 km north	July 2017	Approved	Outline application with some reserved matters to provide up to 400 new dwellings, up to 500 m2 of non-residential floorspace (A1, A2, A3, D1 and/or D2), 5,000 m2 of light industrial floorspace (B1 (b)/(c)) and associated works including access, internal road network, highway network, highway works, landscaping, selected tree removal, informal and formal open space and play areas, pedestrian and cyclist infrastructure, car and cycle parking and waste storage. This application is a departure from the Development Plan.
Y/1/17/OUT	Bonhams Field Main Road	December 2017	Approved	Outline Application with some matters reserved for the erection of 56 dwellings with associated open space and creation of

Planning Ref	Address	Date Valid	Status	Proposal
	Yapton BN18 0DX, 2.6 km south-east			new access. This application is a departure from the Development Plan and affects the character and appearance of the Yapton (Main Road) Conservation Area at Bonhams Field Main Road Yapton.
EG/71/14/OUT	Land at former Eastergate Fruit Farm Eastergate PO20 3RP, 0.3 km west	February 2015	Approved	Outline application for the erection of 60 residential dwellings with new vehicular access, open space and other ancillary works at Land at former Eastergate Fruit Farm.
BN/16/12	Pollards Nursery Lake Lane Barnham PO22 0AF, 1.3 km south-east	October 2013	Approved	Outline application with some reserved matters for development of up to 107 residential units (this application is a departure from the Development Plan) at Pollards Nursery Lake Lane.
AL/107/16/RES	Land West of Westergate Street & East of Hook Lane Westergate PO20 3TE, 1.4 km south-west	May 2017	Approved	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 and East of Hook Lane.
BN/43/16/PL	Angels Nursery Yapton Road Barnham PO22 0AY, 1.3 km south-east	May 2017	Approved	Application for 95 dwellings together with access, landscaping open space and associated works at Angels Nursery.
EG/6/18/RES	Eastergate Fruit Farm Barnham Road Eastergate PO20 3RP, adjacent to the west of	May 2018	Approved	Approval of reserved matters following outline consent EG/71/14/OUT for the construction of 60 dwellings with new vehicular access, open space and ancillary works at Eastergate Fruit Farm.

Planning Ref	Address	Date Valid	Status	Proposal
	the Scheme			
WA/23/17/OUT	Barnfield House Arundel Road Fontwell BN18 0SD, 1.3 km north	February 2018	Approved	Outline application with all matter reserved for residential development comprising of 22 dwellings involving demolition of Barnfield House and existing outbuildings. This application is a departure from the development plan at Barnfield House.
BN/6/18/RES and BN/32/15/OUT	Lillies Yapton Road PO22 0AY, 1.4 km south-east	January 2019	BN/6/18/RES Refused and Appealed BN/32/15/OUT Approved	Approval of reserved matters following outline consent BN/32/15/OUT relating to appearance, landscaping, layout and scale for construction of 38 dwellings including open space, landscaping and new access (resubmission following BN/28/17/RES) at Lillies.
WA/63/19/PL	Land South of Arundel Road Walberton BN18 0QP, 1.3 km north	November 2019	Approved	Erection of 8 dwellings with garaging and open resident and visitor parking, with a new access from Arundel Road, provision of hard and soft landscaping and open space, foul and surface water drainage systems and other works. This application is a departure from the Development Plan.
WA/26/18/OUT	Former Lanes End House Adjacent to West Walberton Lane & Arundel Lane BN18 0QS, 1.1 km north	December 2018	Approved	Outline application with all matters reserved for 6 detached houses with detached garages. This application is a departure from the Development Plan.
WA/75/17/PL	Land adjacent to Sunny Corner Copse Lane Walberton BN18 0QH, 1.3 km north-east	June 2019	Approved	9 dwellings with associated car parking, bin storage and landscaping and creation of a new access road from existing access onto West Walberton Lane. This application is a departure from the Development Plan.

Planning Ref	Address	Date Valid	Status	Proposal
Arun District Strategic Housing Allocation – SD5	Barnham / Eastergate / Westergate (see policy map 2)	N/A	N/A	Masterplan includes provision of two schools and 4,300 homes.
Arun District Strategic Housing Allocation – SD6	Fontwell (see policy map 2)	N/A	N/A	Local Plan Allocation for 400 units
Arun District Strategic Housing Allocation – SD7	Yapton (see policy map 2)	N/A	N/A	Local Plan Allocation for 500 units
Barratts Development	Barnham Road / Fontwell Avenue, Adjacent to the Scheme	n/a	n/a	The Barratts David Wilson Homes development, which is located to the south and west of the Scheme, is expected to comprise approximately 500 homes. Construction works are anticipated to begin in 2022 and be completed by 2027. The access to the development will be from Barnham Road, in the south and Fontwell Avenue in the north. The proposed land uses include residential development, a care home, informal open space, planting, a sustainable drainage system and a wildlife corridor.

5.6. LIMITATIONS AND ASSUMPTIONS

5.6.1. Item 6 of Schedule 4 of the EIA Regulations states that an ES should include

'...details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.'

5.6.2. Where there are limitations or assumptions used within the EIA these are clearly identified in this ES. Assumptions specific to certain topics have been identified in the appropriate technical chapters 6 - 13.

5.7. REFERENCES

- Reference 5.1: Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Statutory Instrument 2017 No. 571.
- Reference 5.2: Planning Practice Guidance. [Online] Accessed via <https://www.gov.uk/government/collections/planning-practice-guidance>, 11th March 2020.
- Reference 5.3: IEMA Environmental Impact Assessment Guide to Shaping Quality Development. [Online] Accessed via https://www.iema.net/assets/uploads/iema_guidance_documents_eia_guide_to_shaping_quality_development_v7.pdf, 11th March 2020.
- Reference 5.4: IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation. [Online] accessed via [https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20\(1\).pdf](https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20(1).pdf), 11th March 2020.
- Reference 5.5: Planning Portal [Online] Accessed via <https://www.planningportal.co.uk/>, 29 November 2018.
- Reference 5.6: West Sussex County Council, 2018, Joint Minerals Local Plan. [Online] accessed via <https://www.westsussex.gov.uk/about-the-council/policies-and-reports/environment-planning-and-waste-policy-and-reports/minerals-and-waste-policy/joint-minerals-local-plan/> 16th September 2020
- Reference 5.7: Cabinet Office, 2015, National Risk Register of Civil Emergencies, March 2015
- Reference 5.8: Cabinet Office, Emergency Response and Recovery Non statutory guidance accompanying the Civil Contingencies Act 2004, October 2013
- Reference 5.9: Arun District Council Planning Portal [Online] accessed via: <https://www.arun.gov.uk/weekly-lists/>